

Lithic Typology

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Because the analysis and distributions of stone tool types play such a central part in the interpretation of Keatley Creek floor assemblages, it is appropriate to explicitly describe the rationale and criteria used to define the lithic types used in this study. Such a presentation is also important because of the considerable variability in approaches and definitions used by lithic analysts in North America.

Among the many different approaches to typology, we have found the one advocated by Hill and Evans (1972) to be the most useful for problem oriented research. They essentially argue that typologies should be developed to reflect the kinds of information required to resolve the problems and questions being asked of the archaeological materials involved. Hayden (1993:54-9) has elaborated this approach. In the case of the Keatley Creek assemblages, there were a number of problems that we wanted to address, the most important of which were:

- 1) The relative age and contemporaneity of the many structures, features, and strata excavated at Keatley Creek;
- 2) The relative wealth of the residents of different structures; and
- 3) The organization of activities and social groups within structures.

Each of these questions required that a different type of information be extracted from the stone tool assemblage. Therefore, our resulting typology is really a composite one. The relative age of assemblages could best be determined by making stylistic distinctions among the points that were found at the site. Richards and Rousseau (1987) had previously identified criteria for assigning different point types to the three major cultural horizons within the Late Prehistoric period of the British Columbia Plateau

(Vol. I, Chap. 1, Fig. 16). Size was also important in identifying transitional types of points representing the initial introduction of the bow and arrow during the late Plateau horizon using Plateau style, corner-notched point forms. Middle Prehistoric period point types were also important for identifying deposits from earlier time periods and mixed deposits. Other time-diagnostic artifact types included pipes, various style hand mauls, microblades, and key-shaped scrapers.

In order to monitor differential wealth levels, it was essential to record various kinds of prestige objects, including those made of exotic or rare materials and those requiring unusual amounts of effort or skill to manufacture. Such objects included obsidian, nephrite, copper, mica, graphite, stone pipes, pendants, chipped stone eccentrics, and sculpted items (Vol. II, Chap. 13).

The interpretation of activity areas and domestic areas related to understanding the basic social organization within houses required a morphological analysis that in some way reflected the practical uses of stone tools. The very large number of artifacts that we excavated precluded the possibility of carrying out functional analyses of all artifacts, however, strong arguments could certainly be advanced on the basis of design theory that many tool morphologies would only make sense in terms of a very restricted range of intended uses (e.g., drills, end scrapers, spall scrapers, notches, and others). Thus, artifacts were grouped into types that we thought would reflect different uses due to:

- differing edge angles (e.g., expedient knives with pressure flaking and low edge angles, scrapers, right angle uses of edges);
- differing types of retouch or edge creation (e.g., notching, continuous retouch, bifacial retouch);
- different size parameters (e.g., small versus regular sized notches, boulder spalls, chipped stone adzes);

- special forms that were activity specific (e.g., drills, end scrapers, spall tools, undulating bifacial knives, bifaces);
- special materials reflecting different uses (e.g., nephrite adzes, spall tools);
- the occurrence of easily observed abrasion along working edges, and;
- varying lengths of relative use-lives related to the duration and frequency of different types of activities as well as to storage behavior and provisional discard behavior that could affect floor assemblage patterning as discussed in Volume I, Chapter 12 (e.g., utilized flakes, minimally retouched scrapers, heavily retouched scrapers, bifaces, nephrite adzes).

Other typologies often make additional distinctions which we initially thought might be of some use in identifying use-specific types of tools. Such distinctions involve the inverse versus normal position of retouch, the continuous versus alternating occurrence of retouch, and the overall shape of the working edge. We included a number of these distinctions as heuristic measures, hoping that they might provide insights into tool uses. However, our analyses did not reveal any evident patterning along these dimensions, and we have concluded that artifact distinctions based on these characteristics are largely superfluous for the main questions that we were asking of the Keatley Creek assemblage.

In addition to the categorization of artifacts into classes based on the above criteria, we also recorded a number of specific variables for each artifact that were thought to be strongly related to the above problems. These attributes included, size, edge angle, material, wear state, breakage state, and weathering state.

We have also endeavored to use a more standard lithic terminology in defining types than has frequently been employed in the Northwest. Thus, we have intentionally avoided using the term “formed uniface” due to its

restricted local use, and because it carries very little information of value for the questions that we wanted to address. The term is so broad that it includes items as divergent as endscrapers and pressure-flaked knives, while ignoring the basic similarities in probable use between unifacial and bifacial pressure flaked knives, or unifacial and alternating retouched scrapers. The term, "formed biface," is equally limited since it includes a wide array of objects used for different tasks such as drills, bifacial scrapers, and chipped celts.

Similarly, we have intentionally avoided using the term "biface" to refer to points, such as arrow points. The more traditional use of the term, "biface," refers to relatively large bifacial artifacts normally flaked by means of a billet or indirect percussion. Such objects include handaxes, bifacially flaked core tools, or similar sized tools made from large flakes. By extending the term, "biface," to arrowpoints and indeed any artifact with some bifacial flaking on it, the integrity of the original term is lost. Moreover, there already exists precisely such a term to refer to the entire range of artifacts with any type of retouch on both faces; that term is, "bifacial, or bifacially retouched artifacts." The use of the term, biface, to refer to this entire class of artifacts ignores more standard usage, creates categories of minimal analytical use, and engenders a great deal of terminological confusion. Unfortunately, the use of "biface" in this overly broad sense is becoming more common in North American usage (e.g., Shott 1993). For clarity and usefulness, we will use the term "biface" in its more traditional sense to refer to core or large flake tools that have been bifacially flaked using primarily soft hammer or indirect percussion techniques. We do *not* refer to projectile points, bifacial scrapers, bifacial knives, or drills as "bifaces". Most other terms that we used are traditional lithic terms or are self-explanatory.

It should be noted that we have introduced several new types into our analyses that do not occur in any of the other regional typologies with which we are familiar. These include the division of use-retouched flakes into three different types depending on edge angles (Types 71–73). One of these types (71), the use of right angle breaks for scraping, has probably been widely neglected in regional analyses and frequently been included in the debitage class. However, there were many clear examples of these types of utilized flakes. Their right angle morphology generally renders such tools unsuitable for subsequent re-sharpening or modification. Our analysis of the spatial distribution of these different types of utilized flakes failed to demonstrate that they were used in spatially distinct areas, nevertheless it is difficult to believe that flakes with such a broad range of edge angles would have been used for the same tasks.

Another new type includes the identification of very finely retouched sharp points, which we have called “piercers.” Initially we were uncertain if these objects were really intentionally manufactured tools; however, as the analysis progressed, we discovered more and more of these objects and more and more convincing examples of clearly intentional retouch near the tips of these very pointed objects. Most analysts would probably not distinguish these artifacts from simple debitage or scrapers.

The identification of minimal pressure retouched “expedient knives” is also new to the region as far as we are aware. Most previous analysts would probably have classified these objects as scrapers, however, the very low edge angles, the tendency for the retouch to be invasive, and the very systematic patterning of the flake scars, all indicate that these objects were produced by pressure flaking and that they constitute a distinctive type. The contrasts in their distributions with standard scrapers supports the validity of separating these items from scrapers and creating a separate category for expedient knives. There are several distinct recurrent edge shapes with this

type of retouch, although we did not attempt to record these different edge shapes in our codes. Some of the edge shapes include retouch on concave “hook”-like edges, retouch on straight or convex edges, retouch along two edges that converge to make one long lateral point, and retouch covering small (about 1 cm) areas of edges.

We also distinguish standard size notches and denticulates that appear as though they might be used on shafts the size of arrows or spears, from unusually small varieties that appear as though they might have been used on shafts the size of basketry elements. This interpretation was reinforced by the frequent occurrence of small notches (and scrapers) on edges with low edge angles.

Flakes with reflective, “greasy,” “hide polish” (retouched or unretouched) were extremely variable in shape and retouch characteristics. Much more work is necessary to understand how this class of tools was used in hide working and perhaps other activities.

For the analysis of bifaces, we have largely followed Callahan’s (1979) division according to production stages as described below. However, in cataloging the Keatley Creek bifaces, it became apparent that there were a number of other dramatic differences within this class. First of all, some bifaces were extremely crudely worked (apparently with hard hammer percussion) with thick cross-sections. The small size of these specimens indicated that this crudeness was not simply a result of an early production stage, but was the end product. We suspected that such small crude bifaces might have special uses (**Fig. 1**). Similarly, some bifaces were unusually small, but better finished, and did not appear to be blanks for projectile points (**Fig. 2**). We thought these might also have special uses. There were also large flakes that had relatively limited amounts of bifacial retouch along one or two edges (**Fig. 3**). We called these “expedient bifaces,” and again thought that they might have served special functions or might have been

used in special contexts. The extent of their retouch was generally much greater than “knives” or “expedient knives” and was also generally produced by soft hammer percussion, although clearly there is a continuum of forms that are sometimes difficult to separate.

Among the bifaces that are generally considered “typical” large, soft-hammer thinned bifaces, there was also some important variation, especially in terms of the shape of the proximal end, which generally appears to have been hafted. Thus, we distinguished between round bottomed finely thinned bifaces **Fig. 4**; see also Vol. II, Chap. 13, Fig 5D), square based finely thinned bifaces (**Fig. 5**; see also Vol. II, Chap. 13, Fig. 5F), thin bifaces with lateral notches on the base, and thin bifaces with pointed bases (**Fig. 6**). It was thought that these might reflect stylistic changes over time, corporate group preferences, or functional differences. Finally, a rare but very distinctive small, very thin, “fan-tailed” biface form was identified and thought to possibly be related to a specialized activity (**Fig. 7**; see also Vol. II, Chap. 13, Fig. 5B). In an attempt to determine whether any of these distinctions were meaningful, we conducted an initial distributional analysis of these various categories of bifaces. Unfortunately, the limited numbers of bifaces in most reliably dated contexts (especially floors) does not permit us to advance any firm conclusions. However, on the basis of this exploratory analysis, it does appear that small crude bifaces and finely made square based thin bifaces seem to co-occur in the same deposits in about the same frequencies (especially in HP’s 3 and 7), indicating that they are contemporaneous and possibly functional variants of a single basic tool type. Other finely made bifaces with different base forms may be either contemporaneous stylistic variants or temporal stylistic variants, but unfortunately our contextual control is not adequate to determine this. As for specialized bifacial forms, it is interesting that diminutive bifaces only occur in HP 7, and that fully half of all the fan-tailed bifaces occur in HP 1.

We suggest that both may be specialized forms, although a greater sample size and better contextual data is necessary to confirm this suggestion. Similarly, HP's 101 and 110 are unusual in that they both have high proportions of expedient bifaces (perhaps reflecting a low socioeconomic standing?). These observations and suggestions are advanced here so that future researchers may incorporate such considerations at the outset of their analysis.

Moreover, the fact that broken biface segments sometimes appear to have been used as wedges (*pièce esquillees*) or as cores is evident from the heavy battering present on the broken edges. Similar battering can occur on the edges of other broken flake tools, including their retouched ends. On a much larger scale, similar battering can occur on heavier cobbles or large pebbles. Perhaps these were used for pounding plants, bark, or bone on anvils.

During our analysis, it also became evident that many flakes, tools, and bifaces were intentionally recycled and broken, most probably to allow sharp break-edges to be used for some task. Large, thick scrapers in particular often display the intentional impact percussion marks that initiated the break fracture. With hindsight, we should have had types for intentional breaks and battered cobbles, flakes, and recycled bifaces.

Finally, there are a number of unique or extremely rare artifact types, which, because of the extremely complex and highly organized form and flake removals that they exhibit, we feel constitute meaningful types. These include: flaked quartzite or igneous adzes (**Fig. 12**; see also Vol. I, Chap. 12, Fig. 1), probably the low cost functional equivalent of nephrite adzes or possibly used in hide working as nephrite adzes were sometimes used ethnographically; narrow bifacial knives with undulating blades (**Fig. 9**; see also Vol. II, Chap. 13, Fig. 5C); chipped stone eccentrics with parallels in the collection of the Royal British Columbia Museum and private collections on

the Columbia Plateau (**Fig. 36**; see also Vol. II, Chap. 13, Fig. 4L); and; very thin, unusually shaped, broad, contracting sided bifacial artifacts (fan-tailed bifaces, Type 139 – **Fig. 7**; see also Vol. II, Chap. 13, Fig. 5B); a crescent shaped thin biface (**Fig. 5**); and a large sandstone saw (**Fig. 28**). As far as we know, none of these types of objects appear in other lithic analyses on the British Columbia Plateau, except for occasional eccentrics.

Aside from these unusual cases, the definition of most artifact types is relatively straightforward or self-explanatory. Therefore, in the following pages we present the full typology and defining aspects of each type that we used. In addition to modified artifacts, we also include definitions for various types of debitage that were recognized and the criteria that were used for identifying fire-cracked rock. The more distinctive types are illustrated as part of the Appendix to this chapter.

Additional Notes

Fire-Cracked Rocks:

Rocks that were broken because they were put in fires (and usually water afterward) could be difficult to identify at the Keatley Creek site due to the fact that much of the naturally occurring rock at the site exhibited naturally sharp breaks (probably freeze-thaw induced) and was derived from the mountain slopes overlooking the site. Thus, we established the following guidelines for the field identification of fire-cracked rocks;

- 1) Raw material had to be coherent and resistant to thermal fracture. Therefore, rocks that disintegrated easily were excluded, and rocks with developed planes of cleavage. The best materials were considered to be homogeneous, medium grained rock types such as basalts and andesites;

- 2) Size was also considered to be important. If the original size of rock as it could be reconstructed was either too small or too large, the rock was excluded. Ideal shapes were considered to be small cobbles between about 6 and 15 cm. in size. No fragments under 4 cm were recorded;
- 3) Angularity of edges was an important trait in recognizing rocks that had been broken by fire. At least one edge had to be sharp, angular, and unabraded;
- 4) Shape was considered important for choosing rocks to place in fires. The best shapes for resisting heat fracturing should have been round or subround. Therefore, rocks with sharp angular breaks exhibiting the remains of a round original cortex on some surface were considered good candidates.
- 5) Color was often a good guide to rocks that had been placed in fires, especially rocks that contained iron. Fire discoloration could take the form of reddening or graying of the rocks, depending on the oxidation atmosphere surrounding the rocks in the fire. On the other hand, some rocks do not discolor significantly in fire environments, while others can develop natural colors that mimic fire discoloration or may have even been in brush fires. Therefore, color was not always a deciding criterion in identifying fire-cracked rocks, and;
- 6) The presence of caliche crusts and hematite linings in cracks in rocks was considered to be an indication of natural fracturing processes or lack of fire effects.

Based on a polythetic combination of all these criteria, we feel that most excavators were able to identify most fire-cracked rocks reliably, although there are certain to have been some individual variation. Nevertheless, the overall patterning of fire-cracked rocks across the housepit

floors and roofs indicates that these identifications were relatively accurate most of the time.

Similarly, although it is difficult to identify all of the types correctly all of the time, all lithic tools were examined and typed at least twice, and sometimes more. We are confident that the major types that we have identified (and grouped together for purposes of analysis, e.g., all expedient knives) do have significant behavioural meanings. Indeed, the patterned distribution of many of these types across the floors of the housepits is ample testimony that they are very significant (Vol. II, Chaps. 1 and 11). While there are many aspects of this typology that we would change were we to undertake the analysis again, the major distinctions that we have made have proven to be very robust, useful, and productive in terms of our understanding of the lithic assemblage at Keatley Creek and the basic socioeconomic organization of its prehistoric inhabitants.

Appendix

Artifact Types Used in Coding Keatley Creek Artifacts

001 General miscellaneous: artifacts which cannot be assigned to any other category. (In the analyses of artifact distributions, the following types were classified as miscellaneous: 001, 002, 004, 143, 148, 157, 171.)

Projectile Points (See Vol. II, Chap. 3)

35 Projectile point fragment: recognizable as projectile point fragment or tip but indistinguishable as to type.

Early Points

101 Lochnore point: side notched, leaf shaped, convex basal margin, edge grinding at base.

102 Lehman point: thin, pentagonal with obliquely-oriented, V-shaped corner or side notches.

Kamloops Points

109 Side-notched point, base missing.

110 Side-notched point/concave basal margin.

111 Side-notched point/straight basal margin.

112 Side-notched point/convex basal margin.

113 Multi-notched.

114 Stemmed.

Plateau Points

115 Corner-notched point/concave basal margin.

116 Corner-notched point/straight basal margin.

117 Corner-notched point/convex basal margin.

118 Corner-notched point/base absent.

119 Basally-notched/straight basal margin.

Shuswap Points

121 Contracting stem/slight shoulders.

122 Contracting stem/pronounced shoulders.

123 Parallel stem/slight shoulders.

124 Parallel stem/pronounced shoulders.

125 Corner removed/concave base.

126 Corner removed/"eared."

127 Stemmed/single basal notch.

128 Shallow side notched/straight basal margin.

129 Shallow side notched/concave basal margin.

Bifacial Artifacts

- 002** Miscellaneous biface: bifacially worked artifacts which cannot be assigned to any other category.
- 004** Biface retouch flake with hide polish.
- 008** Biface reduction flake (**Fig. 8**): See Hayden and Hutchings (1989)
- 100** Flake blank: flake requiring little further thinning for reduction to bifacial tool; some indication of intent to manufacture formal tool but not yet recognizable as preform (type 134).
- 130** Bifacial knife (**Fig. 9**): bifaces with either a cutting edge backed by a thick edge, or two bifacial cutting edges.

Categories 192, 193, 131, and 134 represent stages in the reduction of formal bifaces. Artifacts assigned to these categories should exhibit some formal regularity, e.g., circumferential, roughly centered edges. Bifaces have a maximum dimension > 4 cm and/or more than one bifacially retouched edge. The use as tools of objects in any of these categories is not precluded Compare with type 186.

- 192** Edged piece: Callahan's (1979) Stage 2 (Initial edging) biface or fragment. Bifacially worked, circumferential, roughly centered edge-angles (55-75 degrees) on bifaces with width/thickness ratio ≤ 2.00 .
- 193** Primarily thinned piece (see **Fig. 1** for examples): Callahan's (1979) Stage 3 (Primary thinning) biface or fragment. Lenticular cross-sectioned biface with width/thickness ratio 3.00–4.00 and aligned, centered edges. Edge-angles 40-60 degrees. Flake scars contact in center.
- 131** Biface: Callahan's (1979) Stage 4 (Secondary thinning) biface or fragment (see **Figs. 4, 5 and 6** for examples). Flattened cross-section; aligned, centered edge-angles 25-45 degrees; flake scars cross center line and may undercut scars from opposing edge.

- 132** Bifacial perforator: narrow, elongated, bifacially chipped point with sharp tip (See type 151).
- 133** Bifacial drill (**Fig. 10**): narrow, elongated, bifacially chipped point, tip more rounded than on perforator, may exhibit rotary wear.
- 134** Preform: biface (see type #131) or flake with the outline of a recognizable tool form but lacking some features of the completed tool (e.g., notching).
- 135** Distal tip of biface (triangular): self explanatory. However, it may be difficult to distinguish the distal tips of large bifaces from projectile point preforms.
- 136** Plateau horizon projectile point preform.
- 137** Kamloops horizon projectile point preform.
- 139** Thin, fan-tailed biface (**Fig. 7**): Roughly triangular biface, flared at base, base convex. W/t ratio of examples observed to date is > 4.00.
- 140** Bifacially expedient knife (**Fig. 11**): lightly retouched "knife-like" biface/fragment: flake or fragment with one or more bifacially retouched edges with an edge angle less than 55 degrees. No bifacially reduced surfaces and no retouch extending more than 5 mm from edge.
- 141** Lightly retouched "scraper-like" biface/fragment: flake or fragment with one or more bifacially retouched edges with an edge angle greater than 55 degrees. No bifacially reduced surfaces and no retouch extending more than 5mm. from edge.
- 144** Convergent "knife-like" biface: similar to 140 but with two converging retouched edges. Typically retouch is more extensive and invasive on one edge than on the other.
- 185** Wedge-shaped or oval bifacial adze (**Fig. 12**).

Unifacial Artifacts

Scrapers

Flake tools without the characteristic forms of endscrapers or key-shaped scrapers but with regular, continuous, unifacially retouched edges at least 15 mm in length and edge angles > 55 degrees were classified as scrapers. Scrapers with re-sharpened edges were classified as heavily-retouched scrapers in this analysis, while scrapers which had only been retouched once were classified as expedient scrapers. Scrapers were also classified according to the number and location of retouched edges (types 150, 156, 163, 164).

150 Single scraper (**Fig. 13**): one unifacially retouched lateral or distal edge.

156 Alternate scraper: retouched edges on opposing surfaces.

163 Inverse scraper: single scraper with retouch on ventral face of flake. If retouch is present on both ventral and dorsal surfaces see type 156.

164 Double scraper (**Fig. 13**): two retouched edges on the same surface.

165 Convergent scraper: two scraper edges come together to form a point. Apparently not intended for use as a projectile point or unsuitable for such use.

151 Unifacial perforator (**Fig. 14**): see bifacial perforator (type 132) but with unifacial retouch.

152 Unifacial formed borer (**Fig. 15**): artifacts with pronounced projections in the form of a point or spur created by unifacial retouch. Suitable for heavy boring.

153 Small piercer (**Fig. 16**): short, sharp point on a retouched edge or at the intersection of a break and a concave retouched edge.

154 Notch or multinotch (**Fig. 17**): one or more concave edges each formed by the removal of a single large flake from a thick, (> 3 mm) steep (> 55 degrees) side of a flake tool. Width and shape of concave edge suited

to scraping shafts with diameters of 8 mm i.e., concave edge curvilinear as opposed to angular and notch width > 8 mm.

- 54** Small notch (**Fig. 18**): one or more concave edges each formed by the removal of a single large flake from a thick, (> 3 mm.) steep (> 55 degrees) side of a flake tool. Width and shape of concave edge suited to scraping shafts with diameters < 8 mm i.e. concave edge angular as opposed to curvilinear and/or notch width of 8 mm.
- 157** Miscellaneous uniface fragments: unilaterally retouched fragments that cannot be further identified as to type.
- 158** "Key-shaped" uniface scraper (**Fig. 19**): one lateral edge straight from base to tip converging with concave edge on opposite lateral edge. For detailed documentation see Rousseau (1992).
- 159** Uniface "knife": this category will be reserved for uniface artifacts with long, strongly-backed knife-like edges and edge angles less than 55 degrees.
- 160** Uniface denticulate (**Fig. 20**): any flake with a unilaterally retouched, "serrated" edge.
- 161** "Thumbnail" scraper (**Fig. 21**): classified as endscrapers in this analysis. See type 162.
- 162** Endscraper (**Fig. 21**): a single retouched edge opposite the striking platform; edge angle approaching 90 degrees and "long" parallel retouch (usually extending from ventral to dorsal face of thick flake) "Thumbnail" scraper distinguishes a small scraper of the same form.
- 170** Expedient knife (**Fig. 22**): uniface invasive retouch on dorsal surface of flake with no edge robust and/or straight enough to serve as a scraper. Edge angles < 50 degrees. Intentional retouch tends to be more invasive (> 2 mm) and less abrupt than use retouch (see type 180).
- 70** Expedient knife, inversely retouched: same as 170 except that retouch is on the ventral surface of the flake.

- 71** Utilized flake on break.
- 72** Utilized flake on thin (< 35 degrees) flake edge.
- 73** Utilized flake on strong (> 35 degrees) flake edge.
- 74** Retouched flake with invasive retouch extending no more than 1mm from the edge: flakes are assigned to this category when flake removals are regular, extend at least 10 mm along the edge of the flake, and are thought more likely to be the result of intentional retouch than of utilization.
- 171** Flake with abrupt irregular retouch: edge resembles trampled edge but may be the product of use retouch.

Miscellaneous Chipped Stone

- 143** scraper retouch flake with hide polish.
- 145** Pièce esquillée (**Fig. 23**): flake with ventral scar, crushed at ends but without primary flake scars or scars extending full length of flake, usually thinner than bipolar core (see type 146).
- 146** Bipolar core (**Fig. 24**): core with crushing on both ends, usually thicker than pieces esquillées with no original ventral scar, primary flake scars on one or more faces may extend full length of core (see type 145).
- 147** Microblade: straight, parallel edges; striking platform approximately at right angle to axis of blade; width ≤ 7 mm.
- 148** Flake with polish/sheen: (but no retouch including use retouch).
- 149** Microblade core/core fragment: unidirectional core with regular parallel ridges around circumference; width of flake scars ≤ 7 mm (see type 189).
- 180** Utilized flake: any flake exhibiting continuous use retouch extending at least 1cm. Use retouch is typically more abrupt and less invasive (≤ 2 mm) than intentional retouch. Use retouch may be confused with trampling. Use wear is typically more regular and extensive than

- trampling retouch and flake scars may appear older, more worn and weathered (This general type was replaced by types 71-74, and 171).
- 182** Core rejuvenation flake: dorsal surface shows evidence of use as striking platform with beginnings of flake scars around circumference.
- 183** Spall tool: cobble spall with use retouch or no retouch (Spall: large, flat flake derived from cobble and exhibiting cobble cortex on rounded surfaces. May be produced by natural or cultural processes.).
- 184** Retouched spall tool: retouched cobble spall (**Fig. 25**).
- 186** Multidirectional core (**Fig 26**): nodule, chunk, or large flake from which flakes suitable for use as retouched or unretouched flake tools, scrapers, etc have been removed from more than two directions; no apparent intent to reduce core into formal bifacial tool though use of core as tool is not precluded. Compare 192.
- 187** Small flake core: flake, biface, etc. which has been used as a core but which is not identifiable as a bipolar core.
- 188** Retouched/backed blade: blade with one retouched edge.
- 189** Unidirectional (pyramidal) core: similar to microblade core but larger; tapered; single striking platform; regular, parallel flake scars around circumference; width of flake scars > 7 mm.
- 190** Hammerstone.
- 191** Blank: flake, nodule or chunk suitable for bifacial reduction. Spalls which might be assigned to this category will be counted as spalls in the lithic sample coding and will not be assigned artifact numbers.

Ground Stone Artifacts

- 200** Miscellaneous ground stone: fragments with ground surfaces or edges.
- 201** Abrader (**Fig. 27**): slab of sandstone or similar material exhibiting striations and possibly grooves on one or more surfaces.

- 202** Sandstone saw (**Fig. 28**): wedge-shaped sandstone slab; narrow edge used for cutting stone by abrasion.
- 203** Ground slate.
- 204** Steatite pipe/tube fragment (**Fig. 29**).
- 206** Anvil stone.
- 207** Abraded cobble or block: cobble with striations, polish or other evidence of culture.
- 208** Abraded cobble spall (**Fig. 30**).
- 209** Ornamental ground nephrite (**Fig. 31**).
- 210** Ochre or pigment (**Fig. 32**).
- 211** Grinding stone/mortar: boulder or large cobble with ground or pecked depression(s) (**Fig. 34**).
- 212** Mica ornament.
- 213** Metal artifact: artifacts made from "historic" metals such as iron and lead. Includes iron projectile points. Does not include copper artifacts which may derive from prehistoric sources.
- 214** Stone bead (**Fig. 35**).
- 215** Stone pendant or eccentric (**Fig. 36**): including bifacial denticulate pendant (oval to leaf shaped biface with shallow notches at one or both extremities suitable for attachment of thong).
- 216** Ground or sculpted ornament including figure bowls (**Fig. 37**).
- 217** Copper artifacts (**Fig. 38**).
- 218** Celt (**Fig. 33**): typically nephrite ground into a wedge with a sharp edge.
- 219** Maul (**Fig. 39**).
- 221** Pigment palette (**Fig. 40**).
- 222** Arrow shaft Straightener (**Fig. 41**).

Other Definitions

Scraper retouch: abrupt (> 55 degrees), regular retouch

Backing: in general refers to a thick, blunt edge opposite a cutting edge; may be manufactured by unifacial or bifacial retouch.

Use retouch: regular but non-intrusive (1–2 mm) retouch, extending at least 10mm.; edge angle < 40 degrees.

Billet flake: pronounced lip, broad fracture front (absence of point impact features), small platform area in relation to flake size, little crushing of platform, possible evidence of platform preparation. (See Hayden and Hutchings 1989)

Bipolar flake: crushing at both ends; crushing of platform; ventral scarring; relatively straight ventral surface.

Primary flake: flake suitable for use as tool; maximum dimension > 2 cm; at least 1 cm of edge robust enough for retouch (edge angle < 45 degrees).

Secondary flake: flakes with recognizable ventral surface not classified as bifacial, bipolar, or primary.

Shatter: debitage lacking a recognizable ventral surface.

Spall: (large, flat flake derived from cobble and exhibiting cobble cortex on rounded surfaces May be produced by natural or cultural forces).

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Photo 1: Item 7818.

Photo 2: Items 5424, 5490.

Photo 3: Items 7594, 7149.

Photo 4: Items 2281, 7151 & (Chapter 2 Shell Bracelet fragment).

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SMALL/CRUDE BIFACES

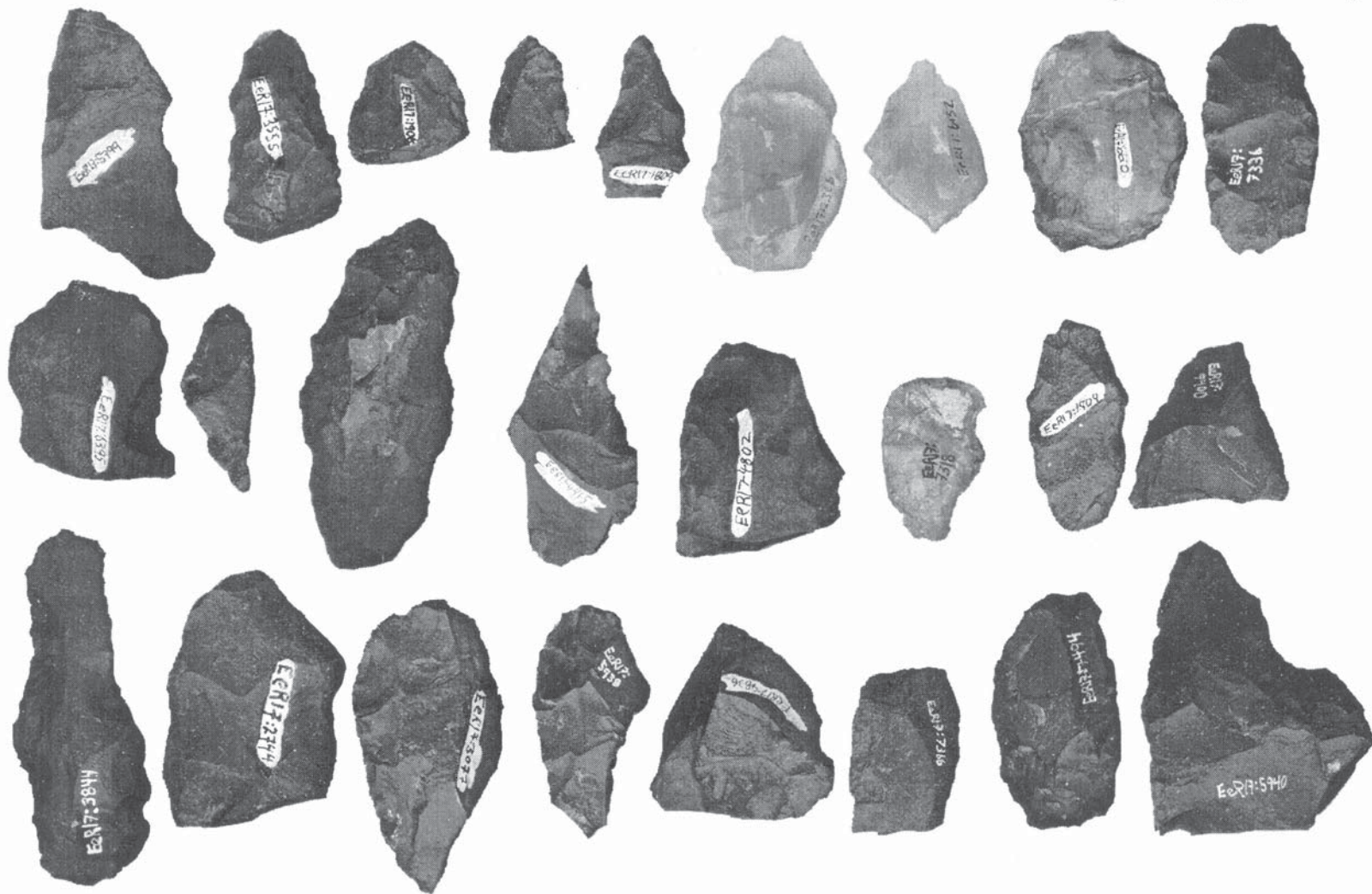


Figure 1. Examples of small, crudely made bifaces from Keatley Creek.

SMALL WELL-MADE BIFACES

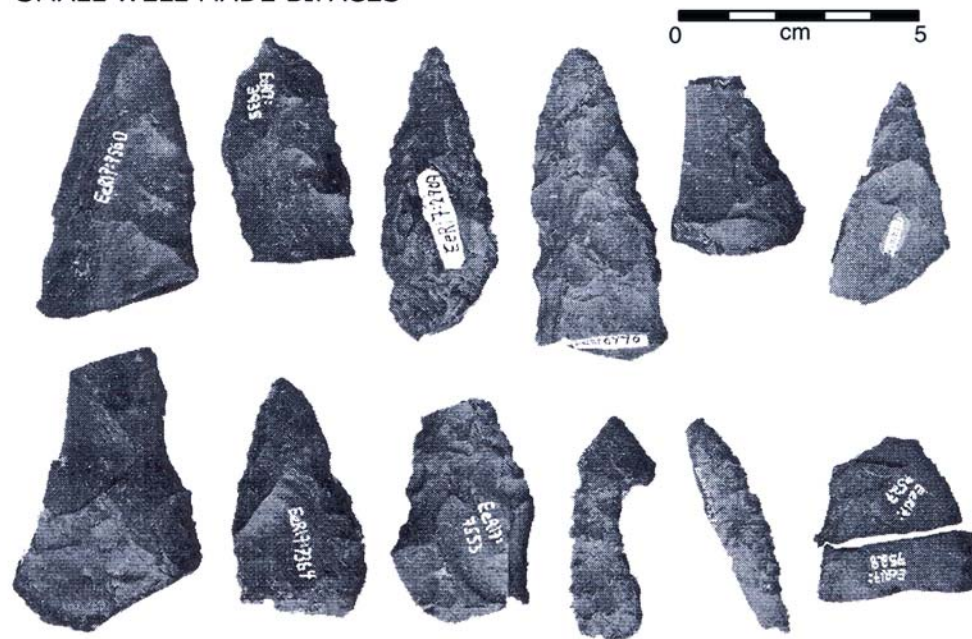


Figure 2. Examples of small moderately well finished bifaces from Keatley Creek.

ROUND BOTTOM THIN BIFACES

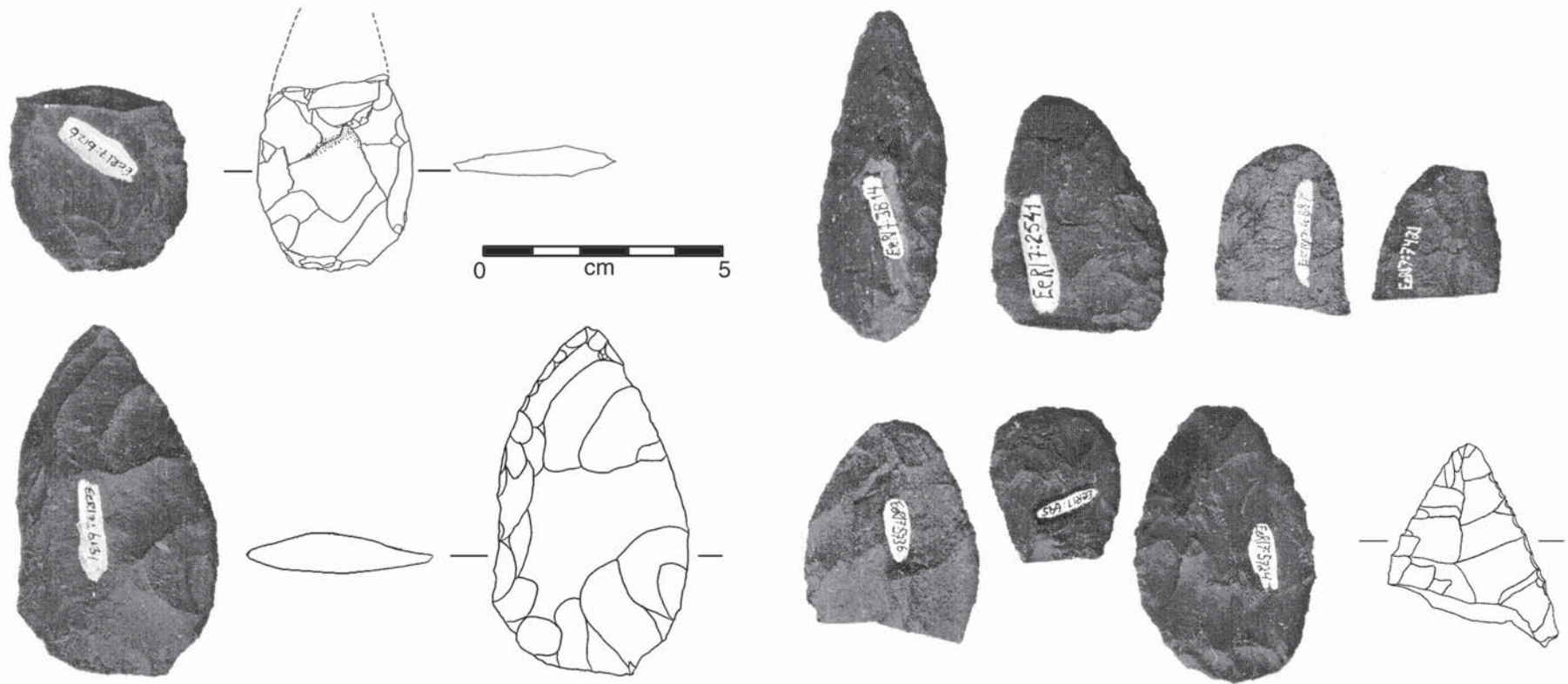


Figure 4. Type 131: Finely made round or oval base.

SQUARE BASE THIN BIFACES

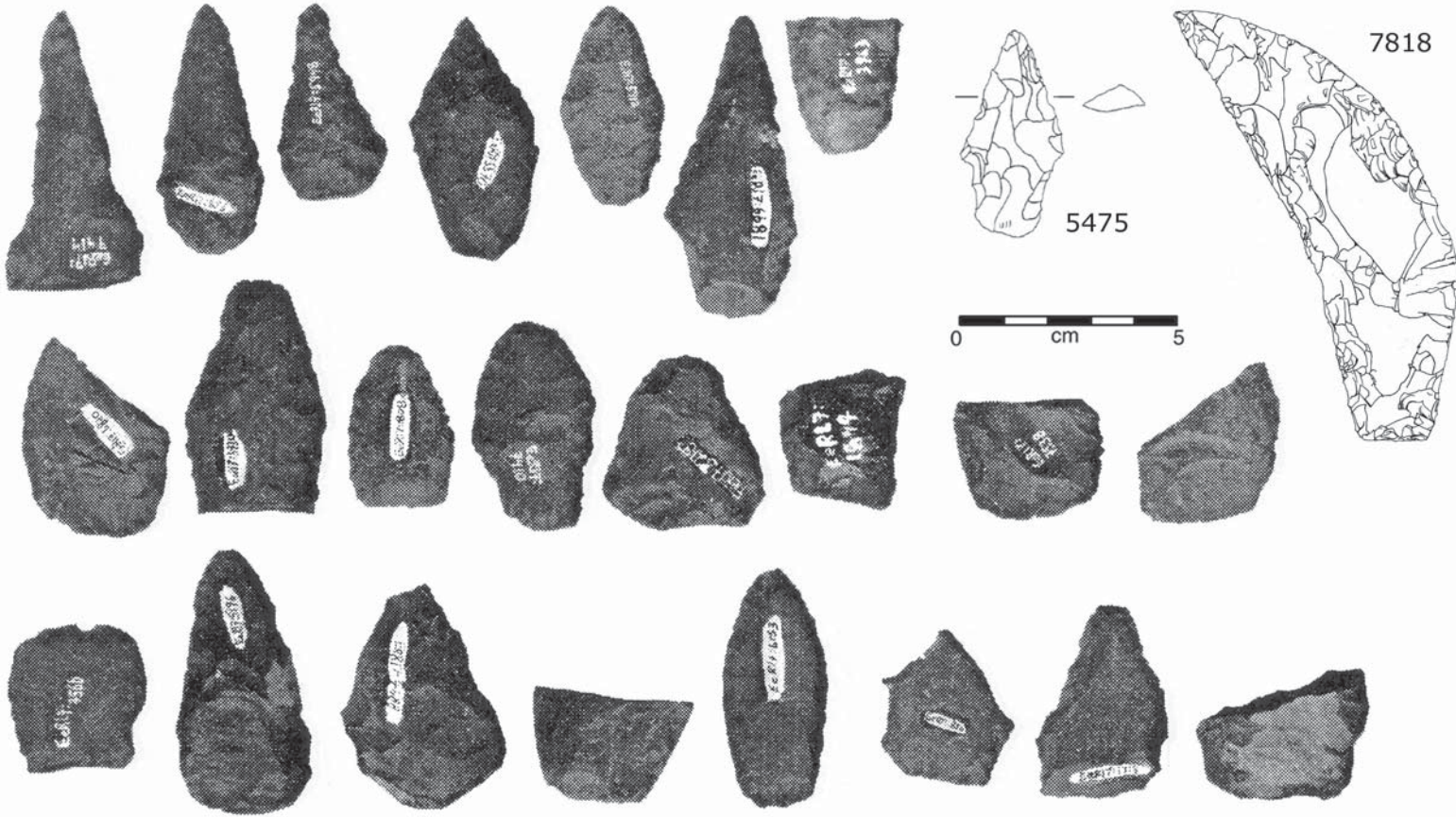


Figure 5. Type 131: Finely made square base.

POINTED BASE THIN BIFACES

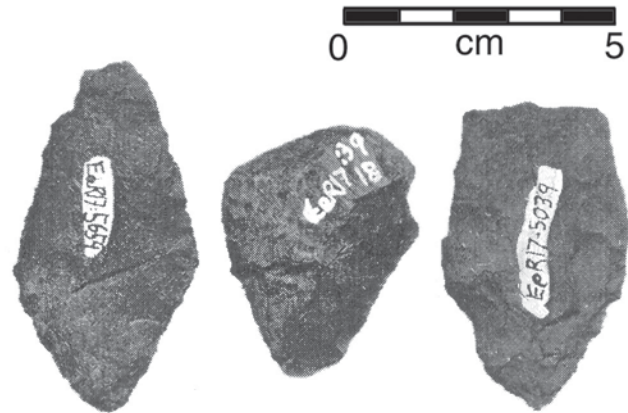


Figure 6. Type 131: Finely made pointed base.

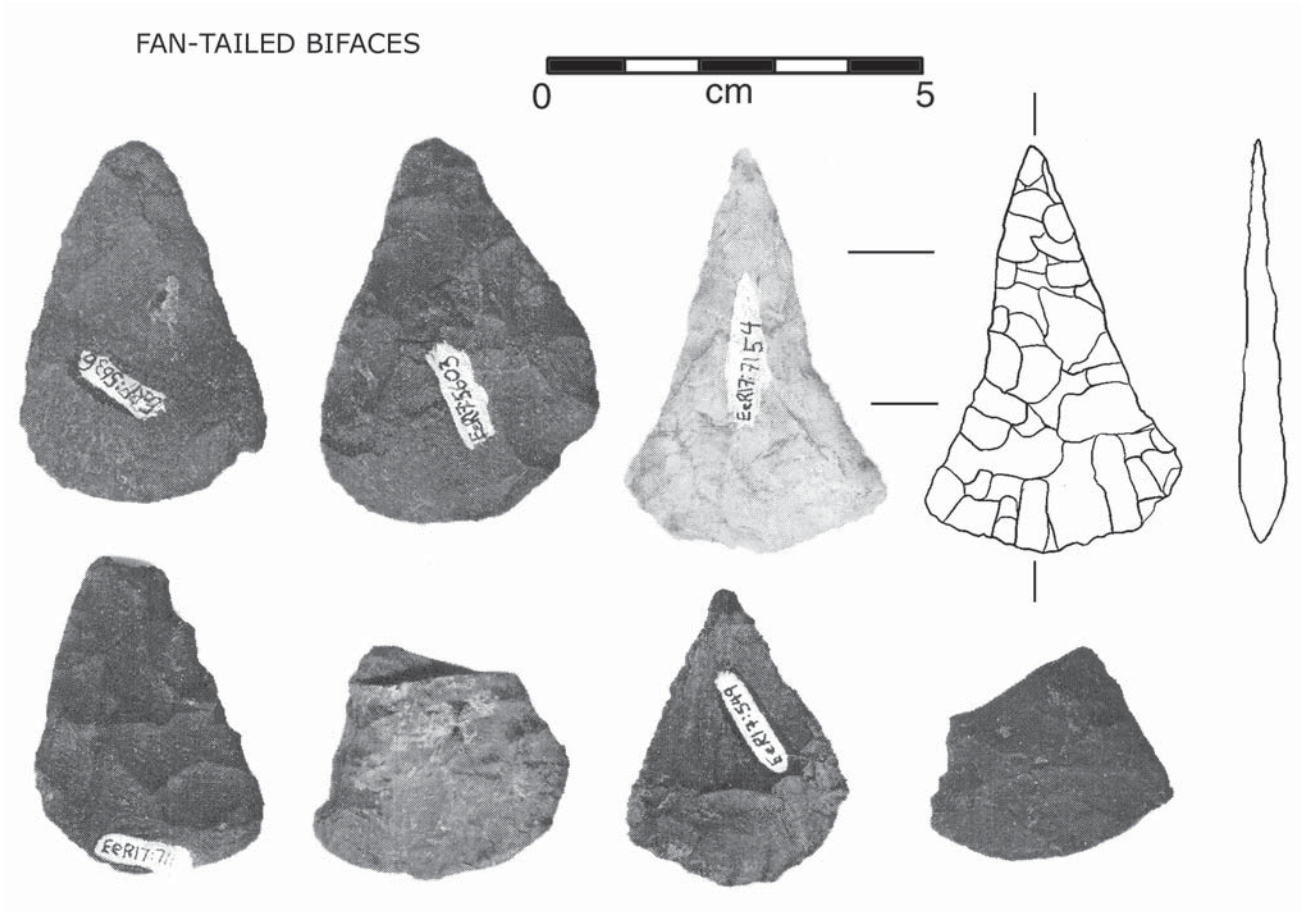
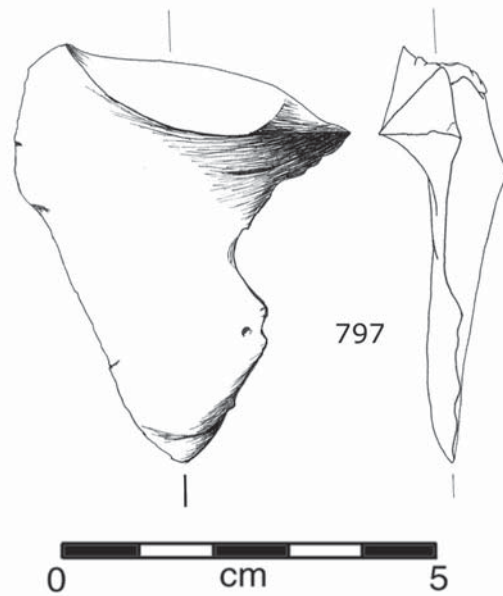


Figure 7. Type 139: Fan tailed bifaces (very thin).

Biface Thinning Flake (R-variety)



Bifacial Knife

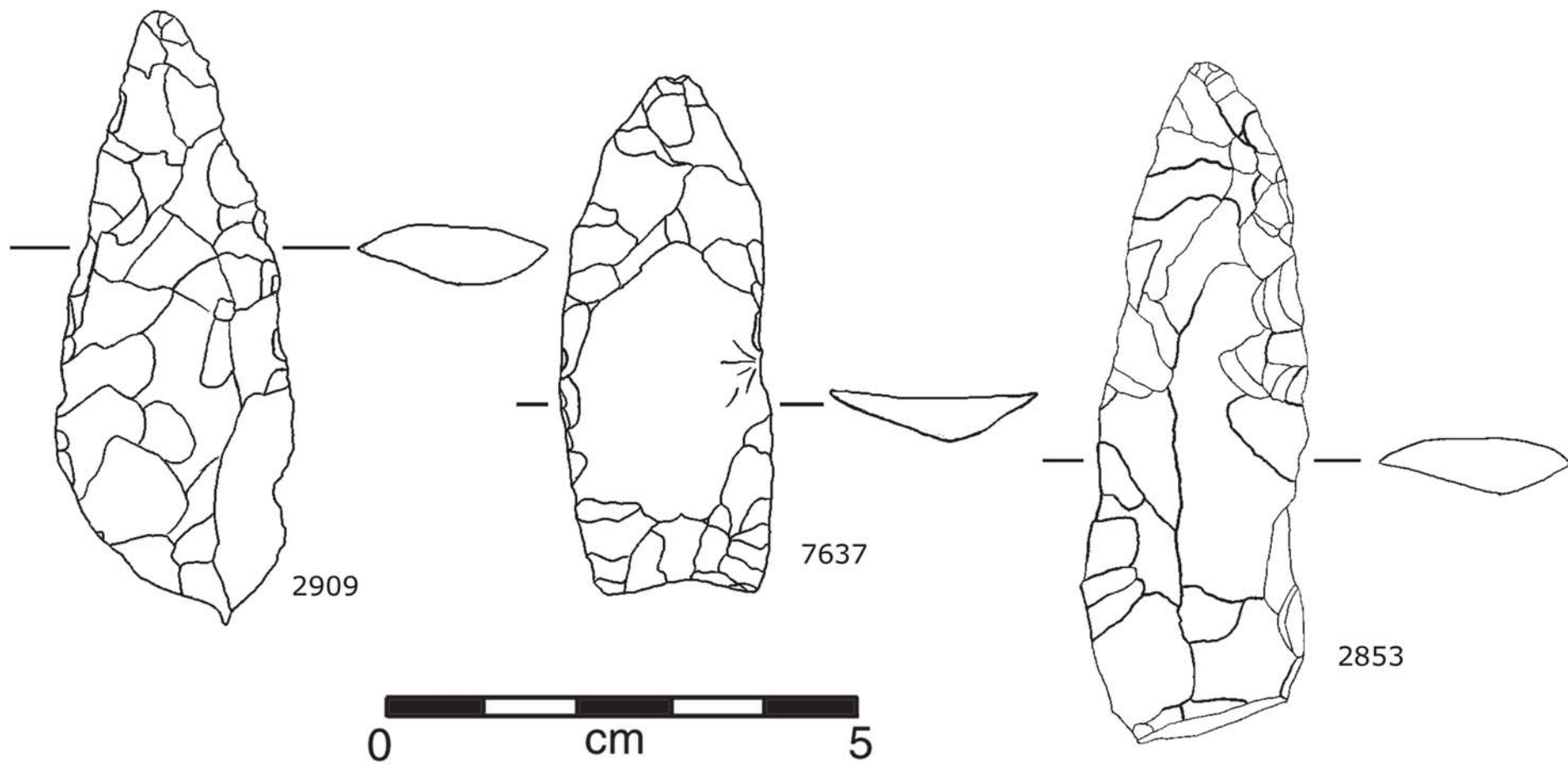


Figure 9. Type 130: Bifacial knife.

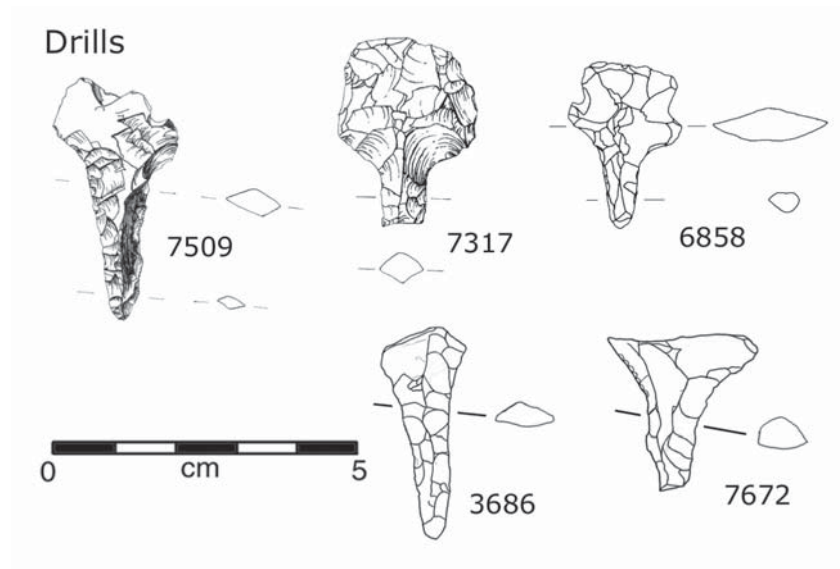


Figure 10. Types 133: Biface drill.

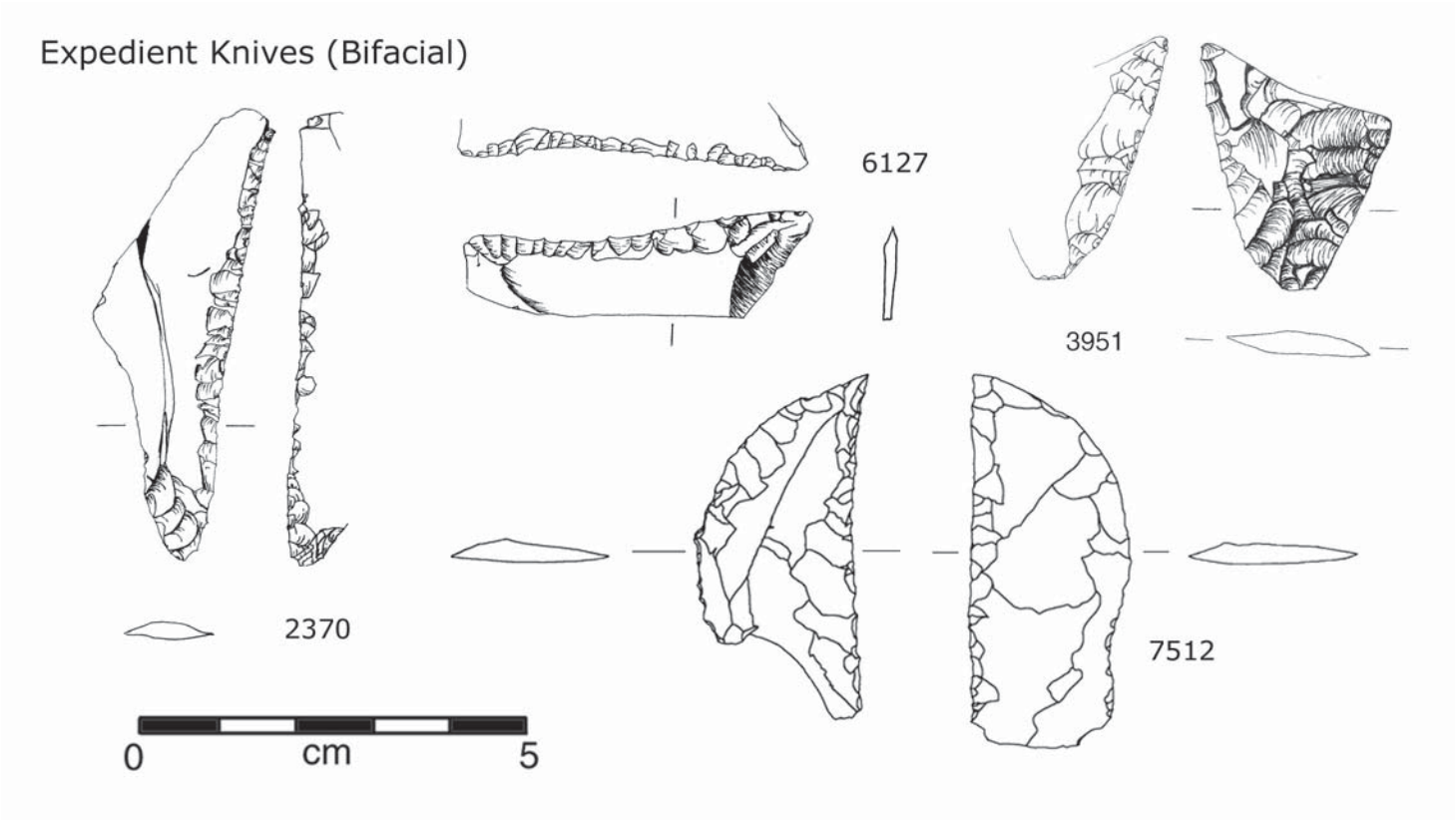


Figure 11. Types 140: Biface expedient knife.

Chipped Stone Adzes

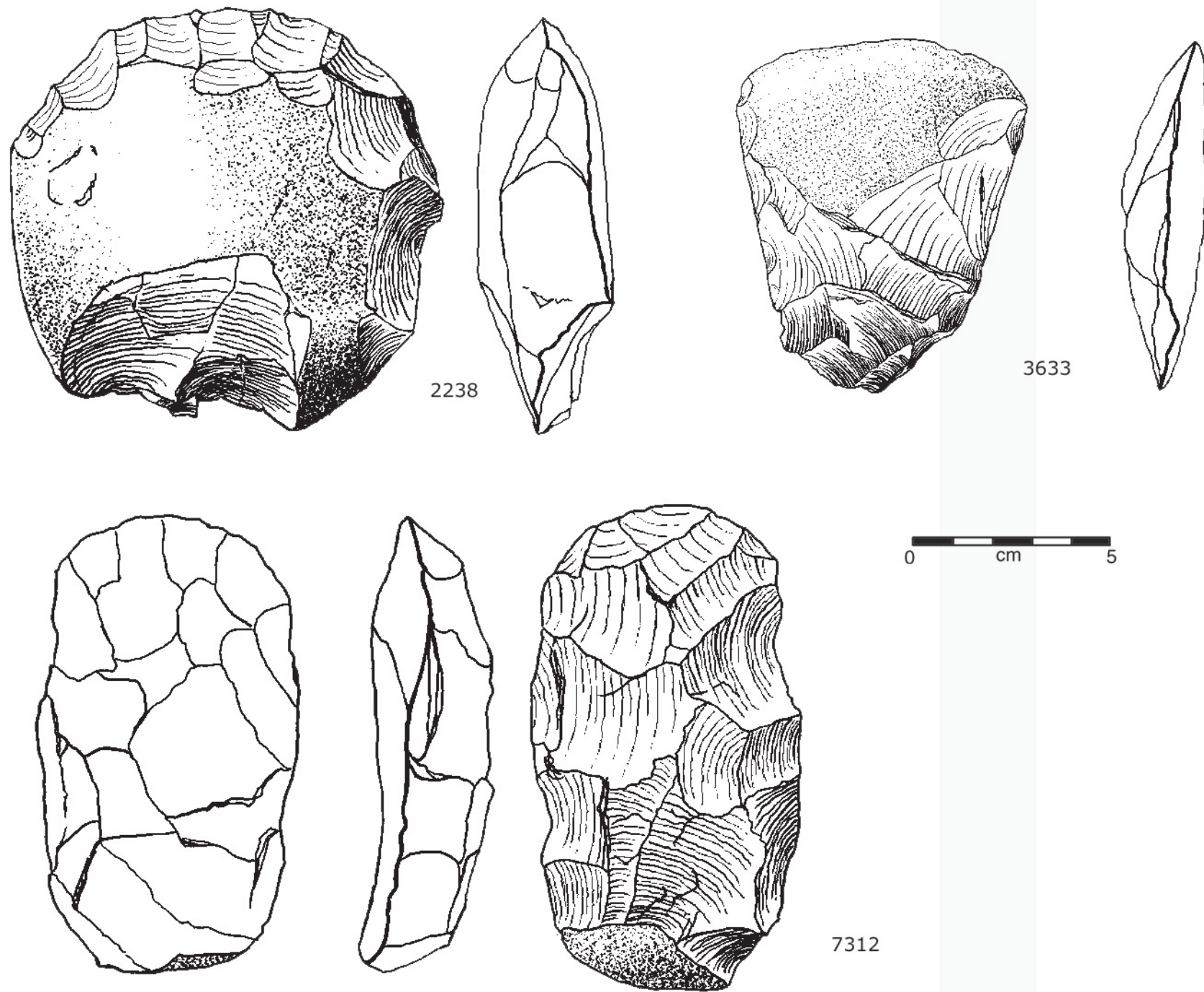


Figure 12. Type 185: Wedge-shaped or oval biface adze.

Scrapers

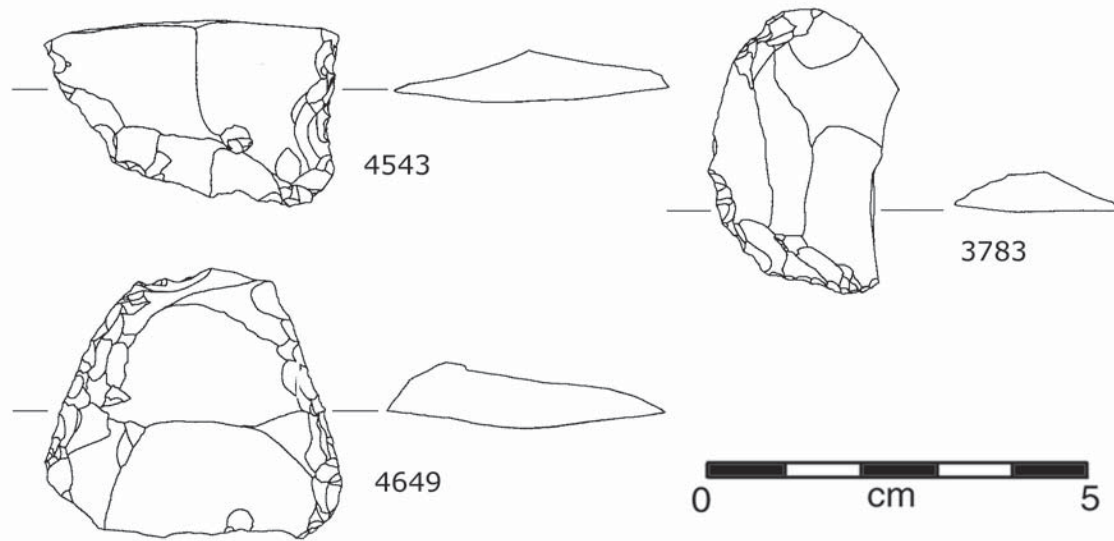


Figure 13. Types 150 and 164: Single and double scrapers.

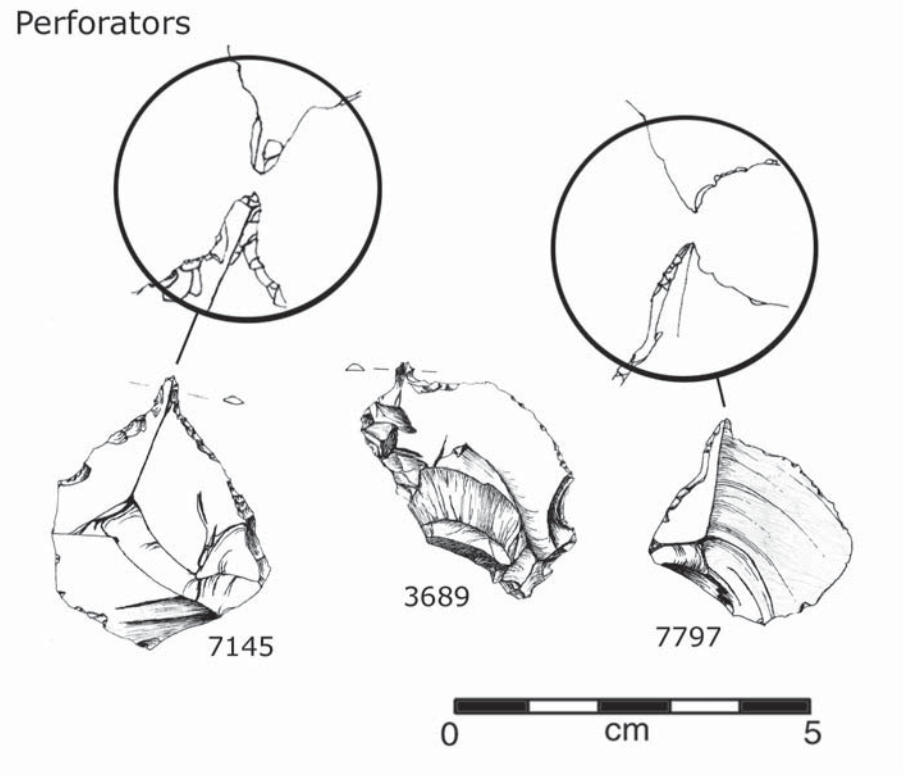


Figure 14. Type 151: Unifacial perforator.

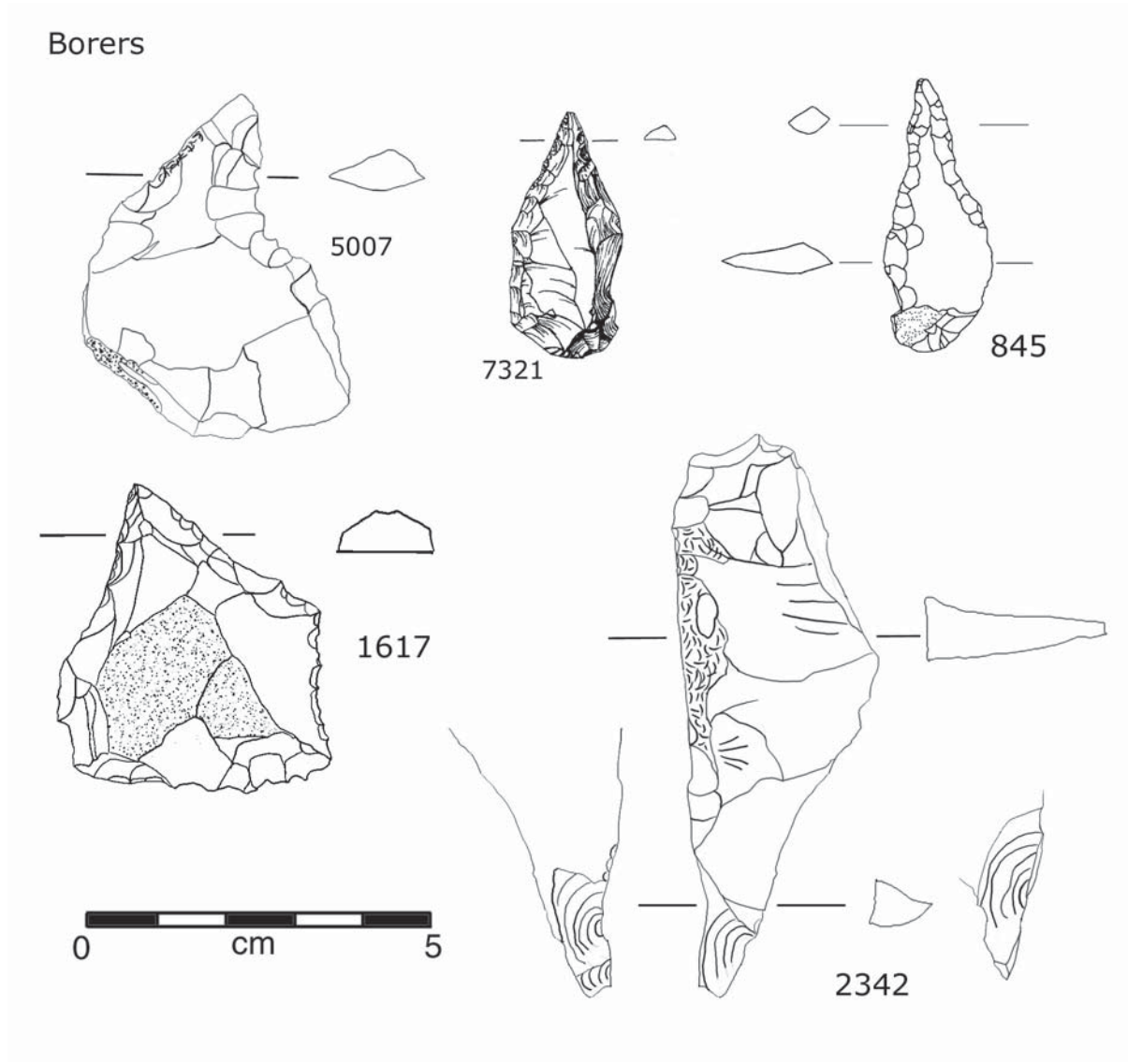


Figure 15. Types 152: Unifacial formed borer.

Piercers

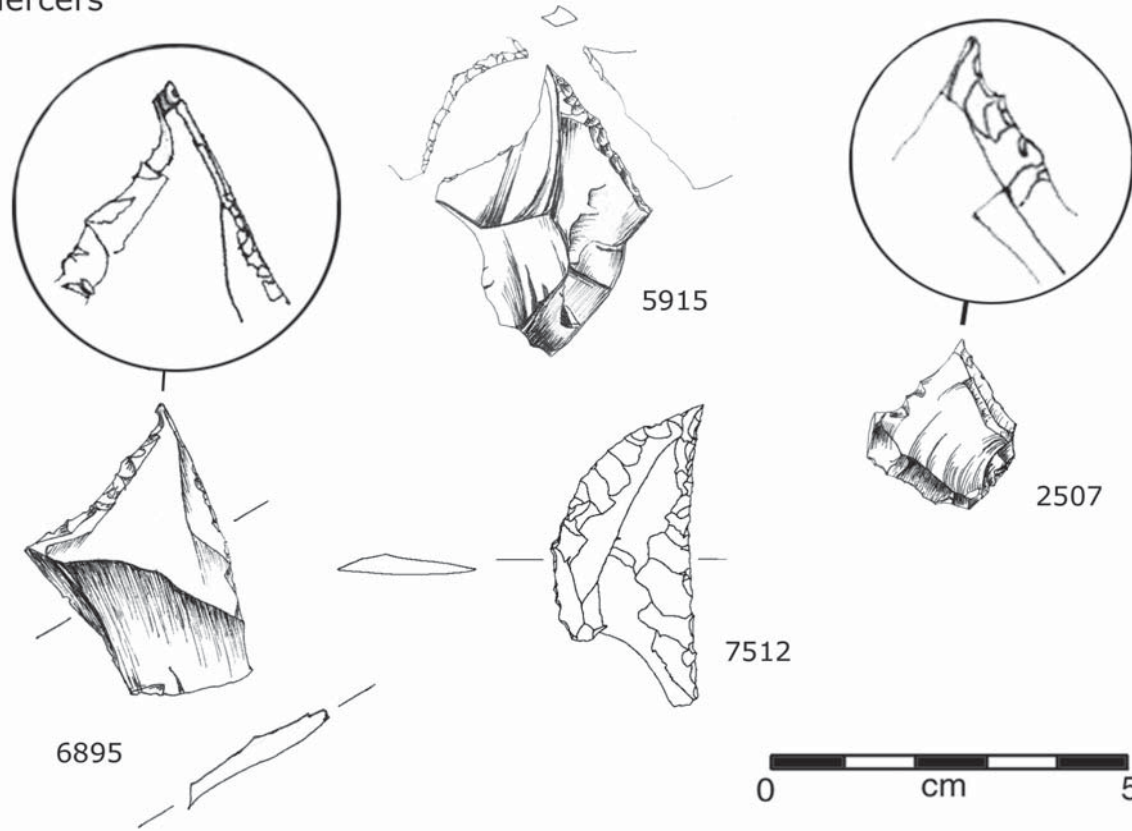


Figure 16. Types 153: Small piercer.

Notches

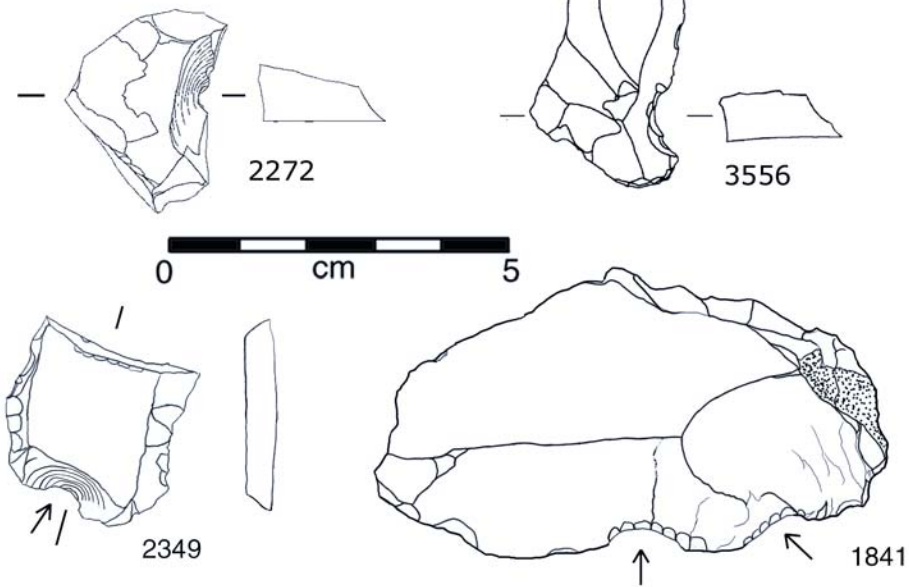


Figure 17. Type 154: Notch or multinotch.

Small Notch



7603



Key-shaped scrapers

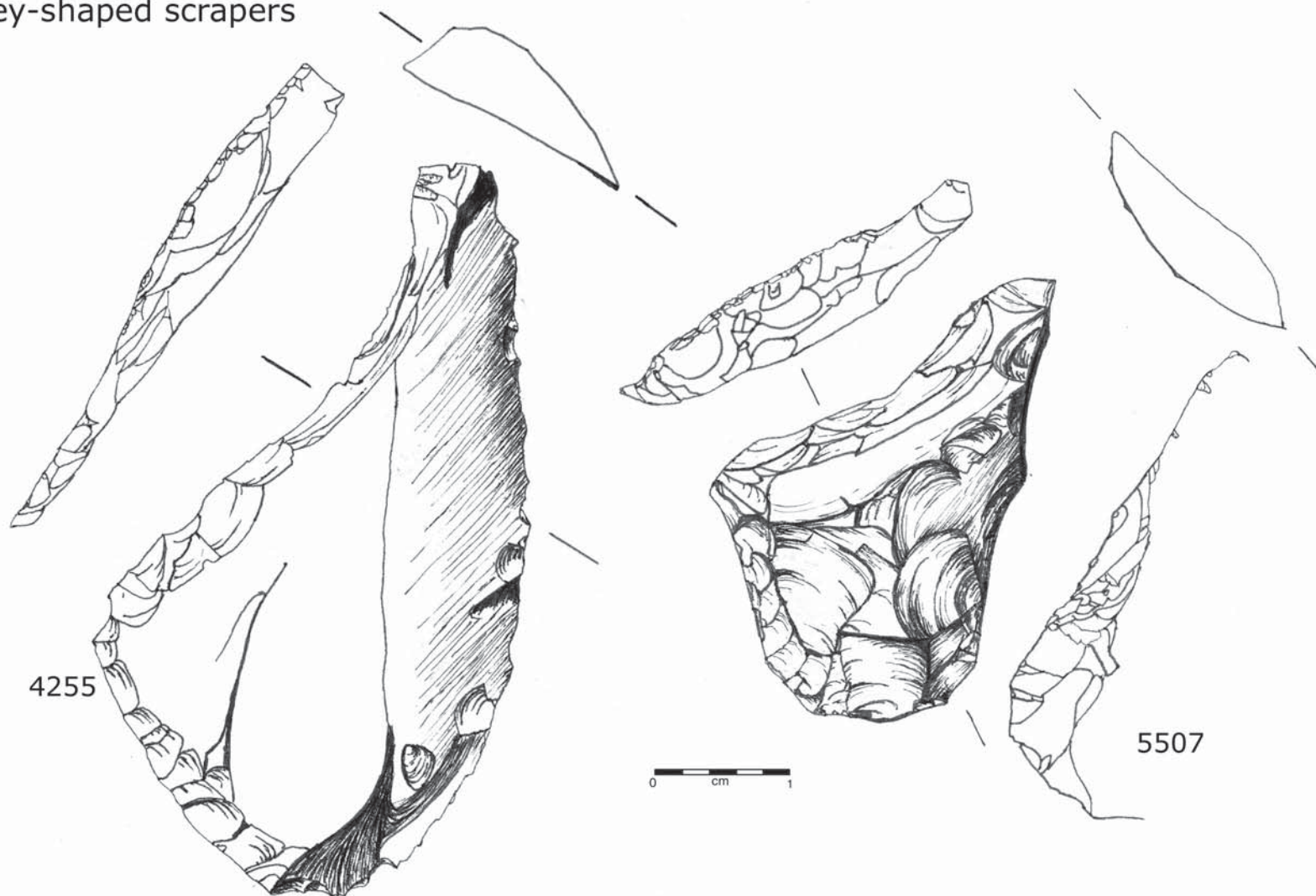


Figure 19. Type 158: Key-shaped unifacial scraper.

Denticulate

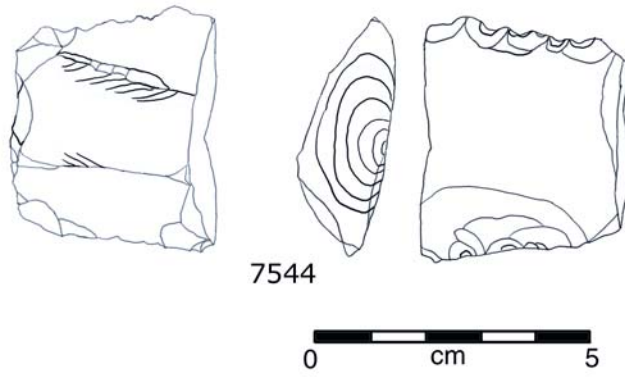


Figure 20. Type 160: Unifacial denticulate.

Thumbnail and Endscrapers

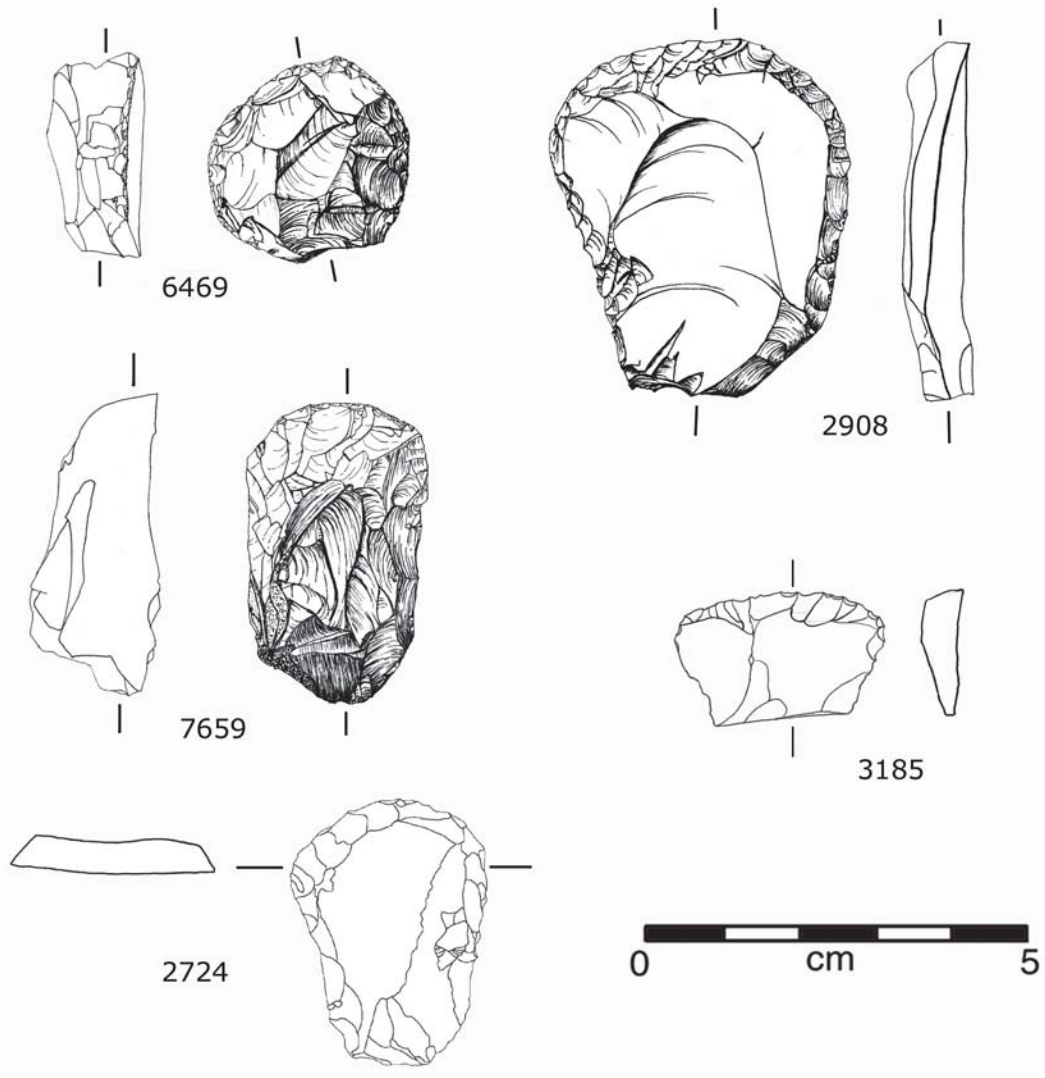


Figure 21. Type 161: Thumbnail scraper.

Expedient Knives (Unifacial)

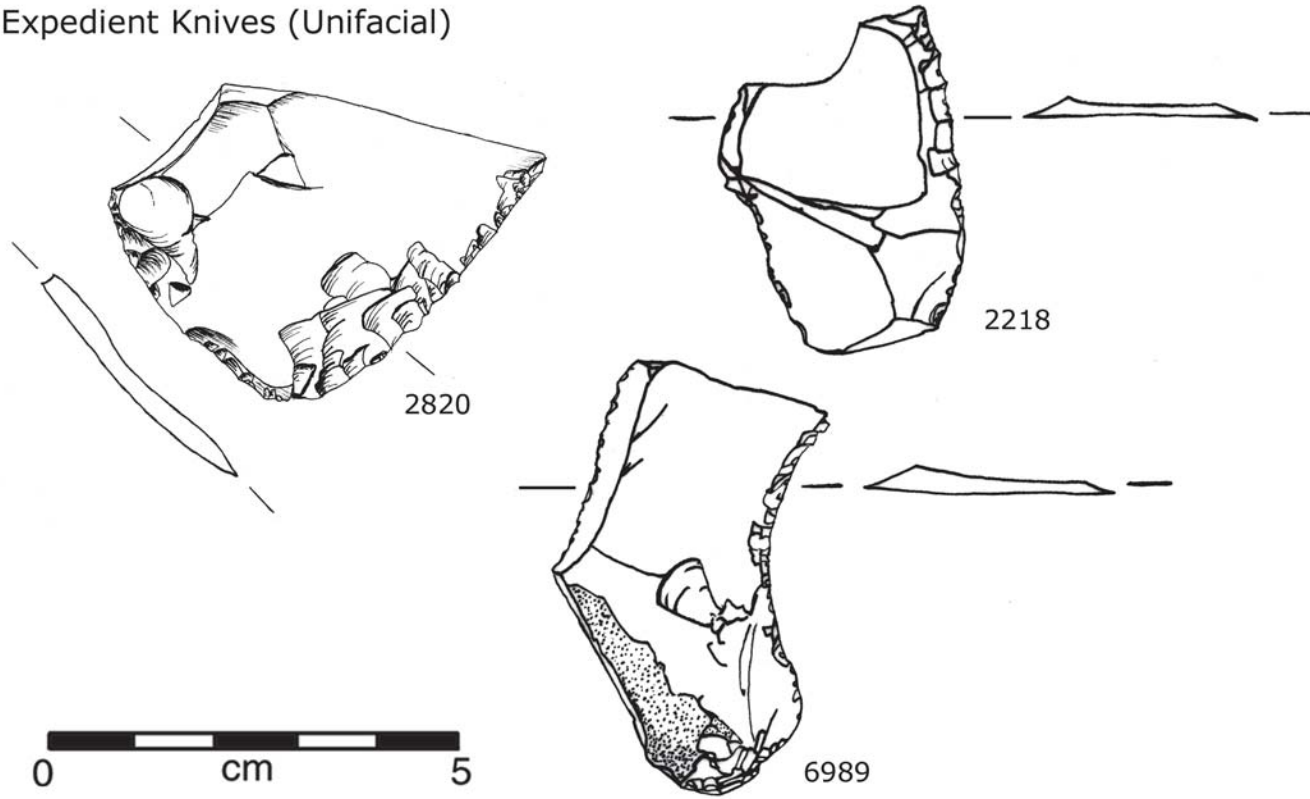


Figure 22. Type 170: Expedient knife.

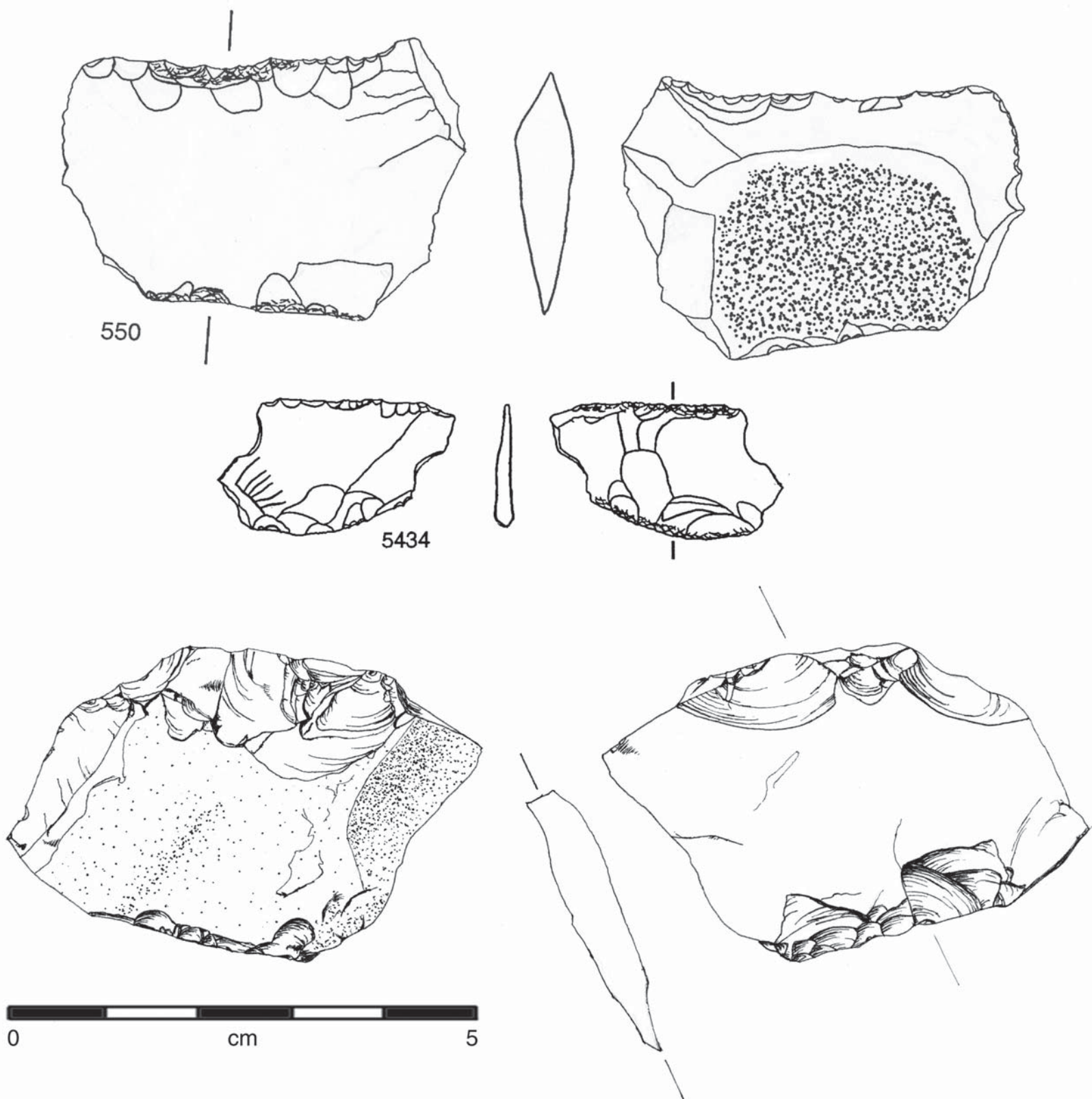


Figure 23. Types 145: Piece esquillee.

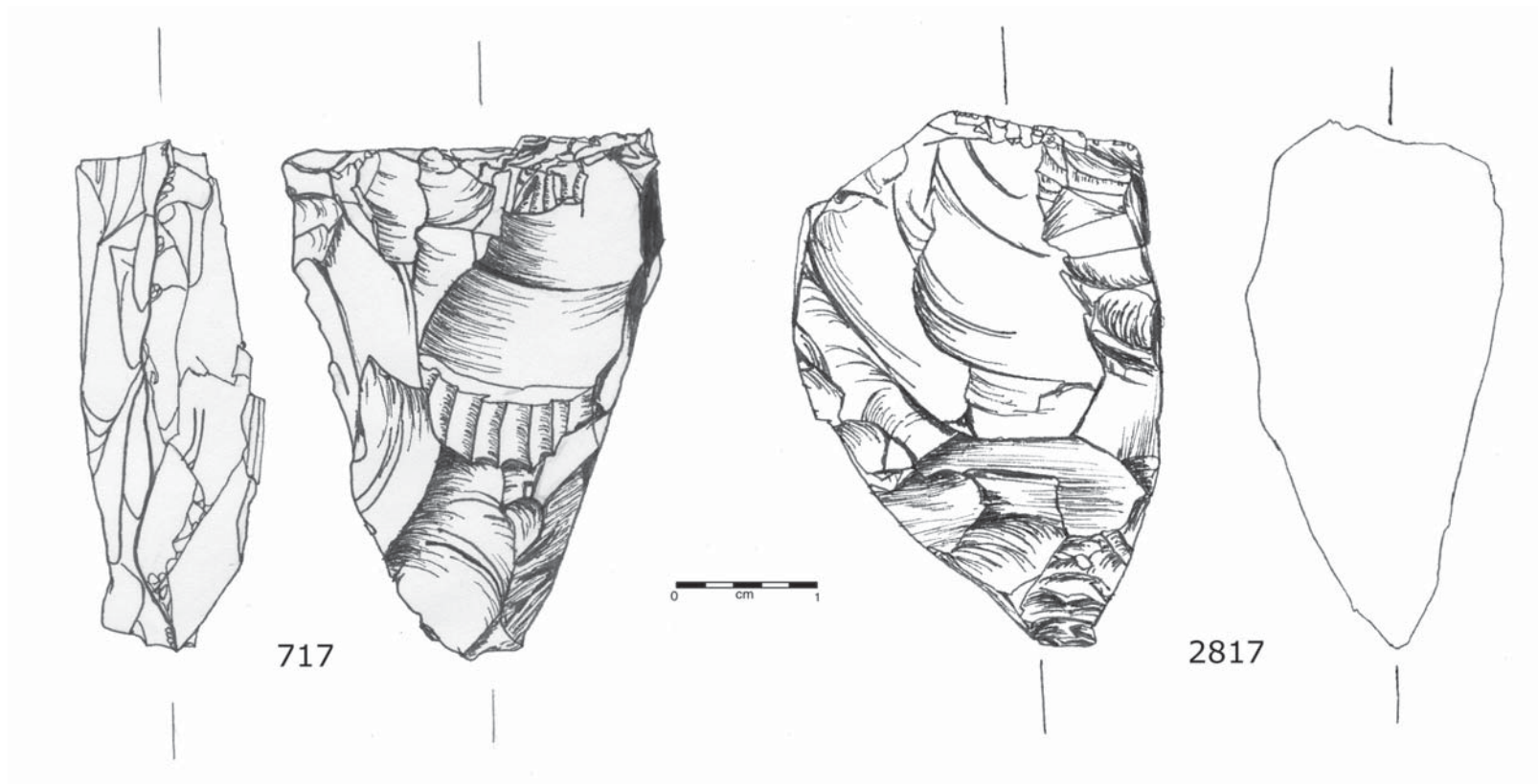


Figure 24. Types 146: Bipolar core.

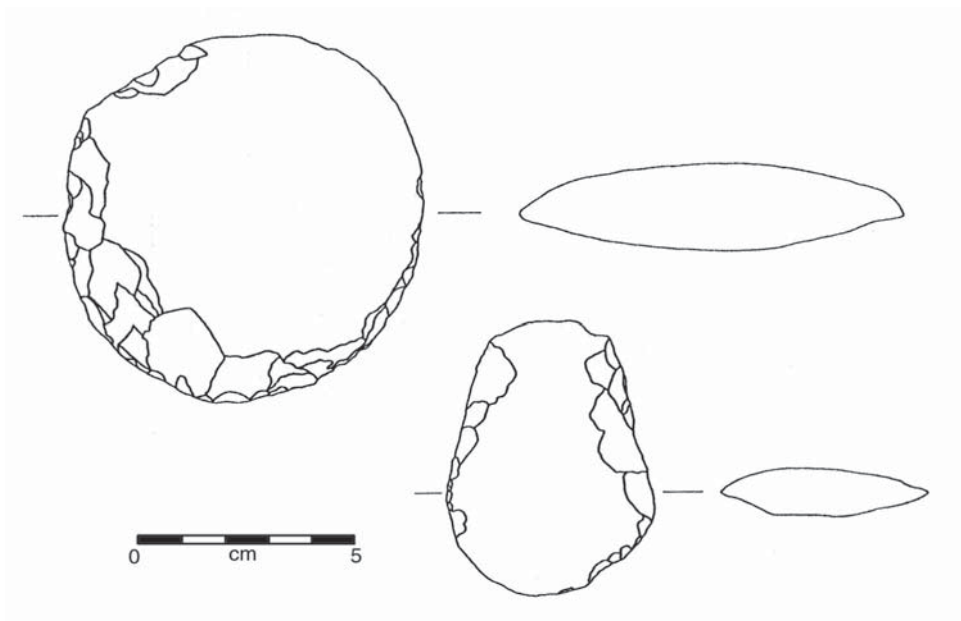


Figure 25. Type 184: Retouched spall tool.

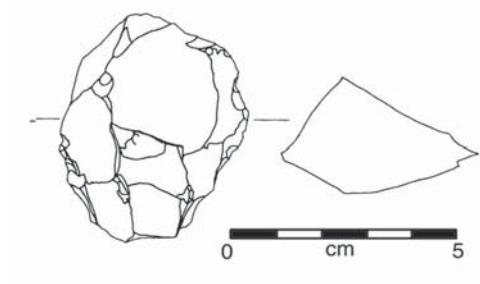
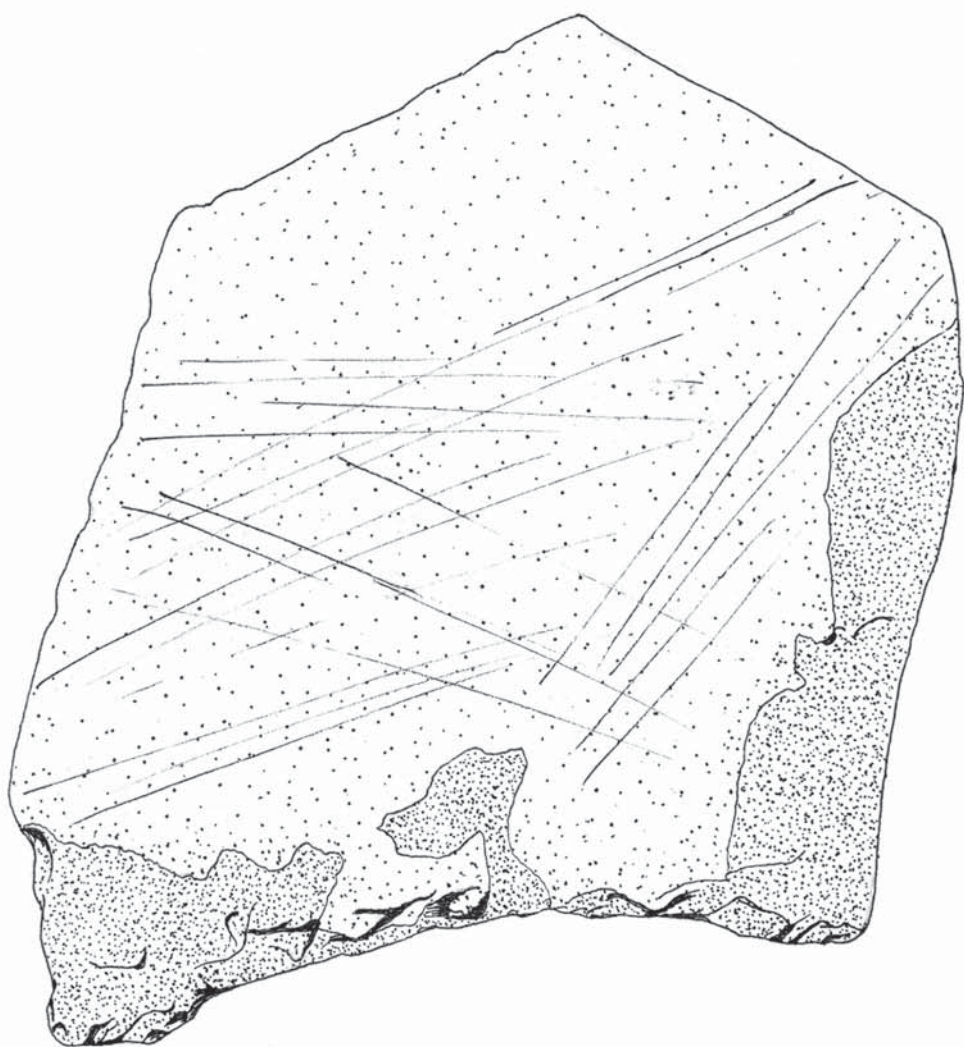


Figure 26. Type 186: Multidirectional core.



2403

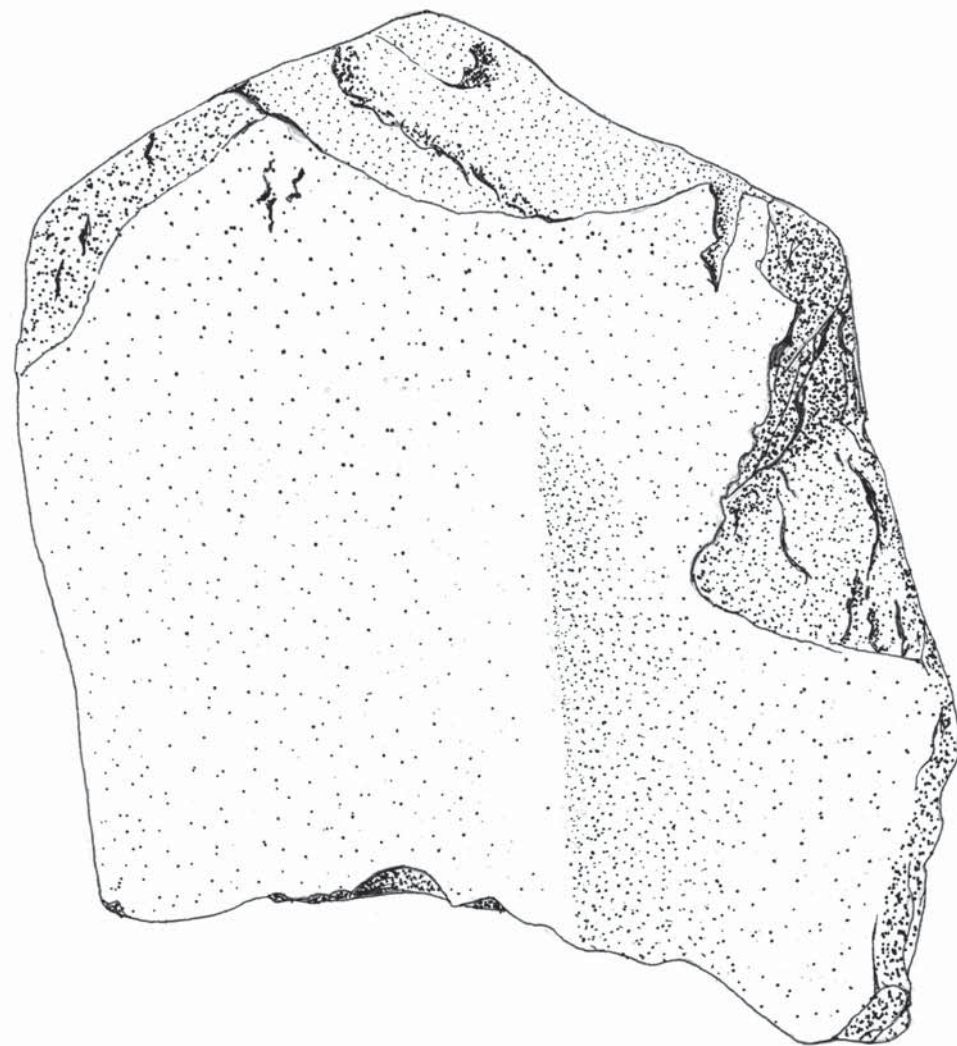


Figure 27. Type 201: Abrader.

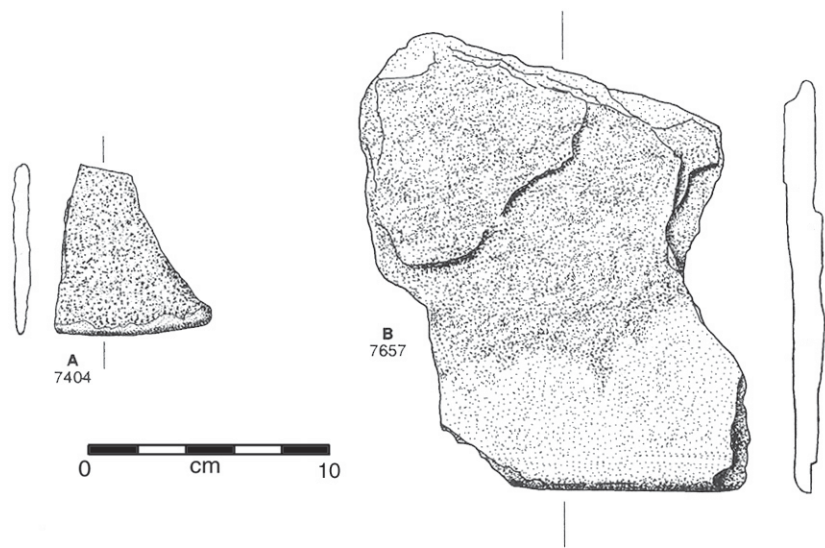


Figure 28. Type 202: Sandstone saw.

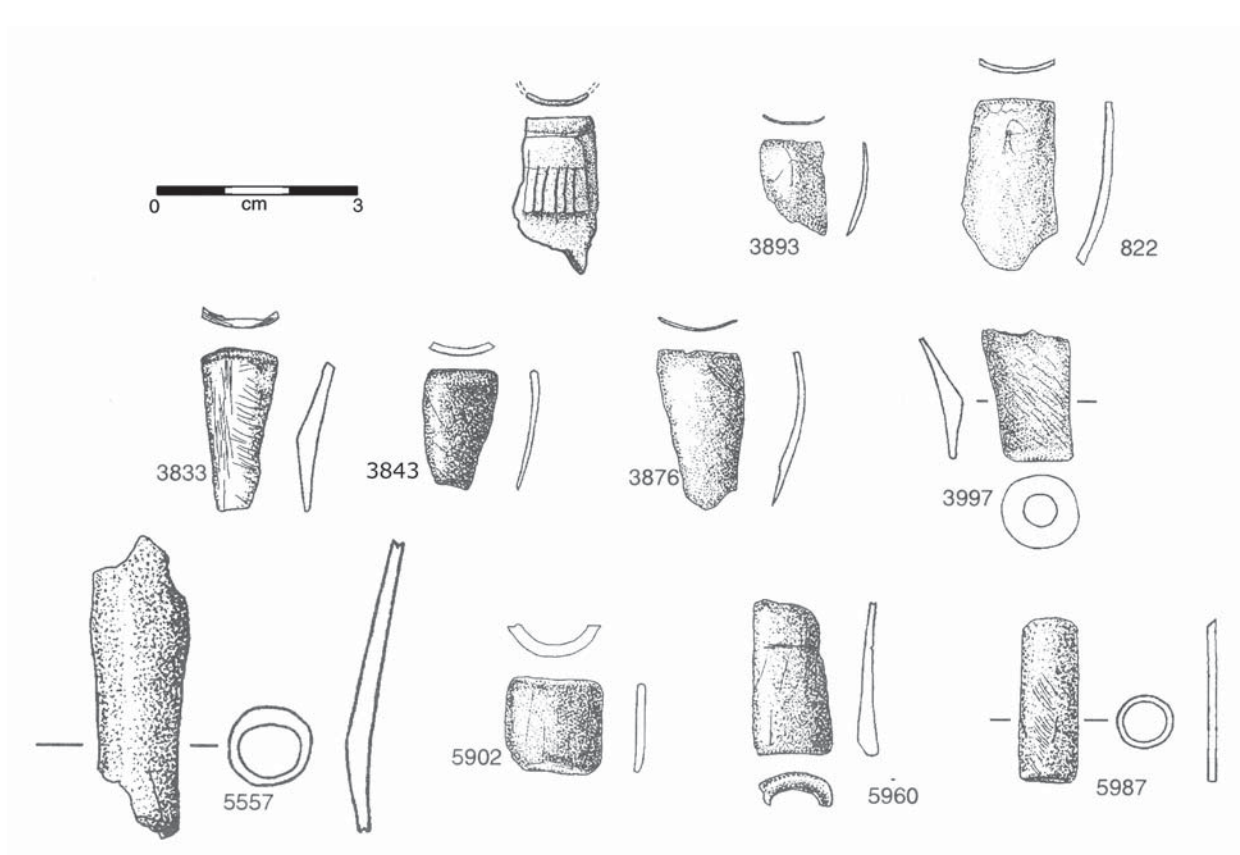


Figure 29. Type 204: Steatite pipe/tube fragment.

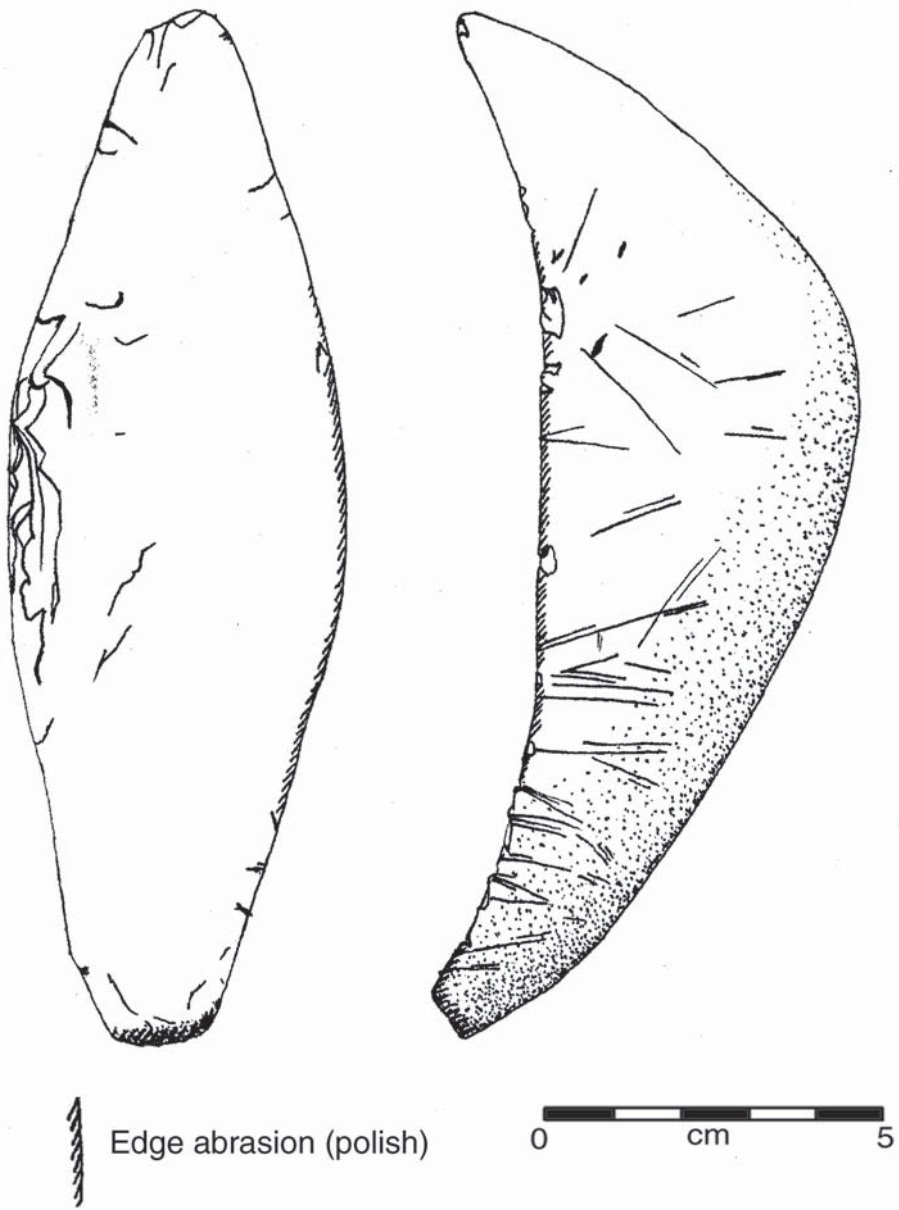


Figure 30. Type 208: Abraded cobble spall.



Figure 31. Type 209: Ornamental ground nephrite.



Figure 32. Type 210: Ochre or pigment.

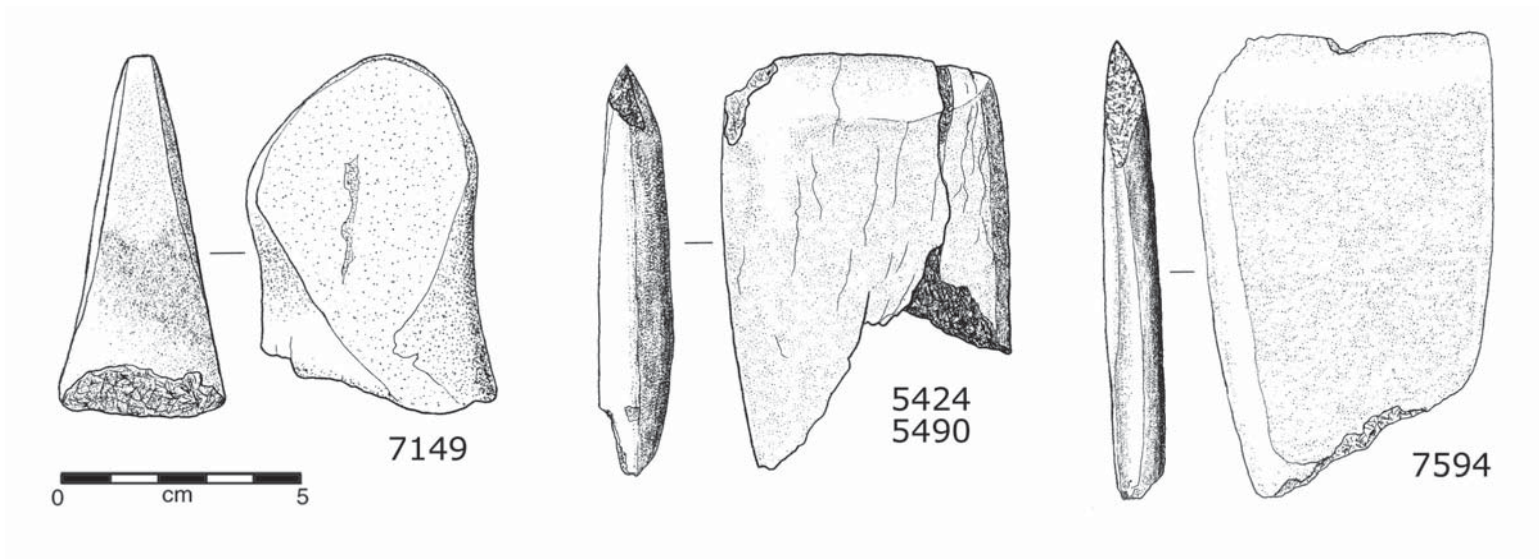


Figure 33. Type 218: Celt.

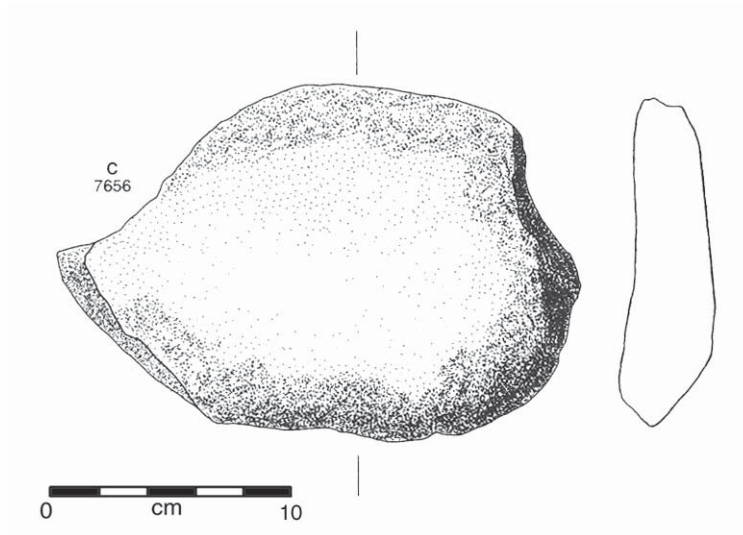


Figure 34. Type 211: Grinding stone/mortar.



Figure 35. Type 214: Stone bead.

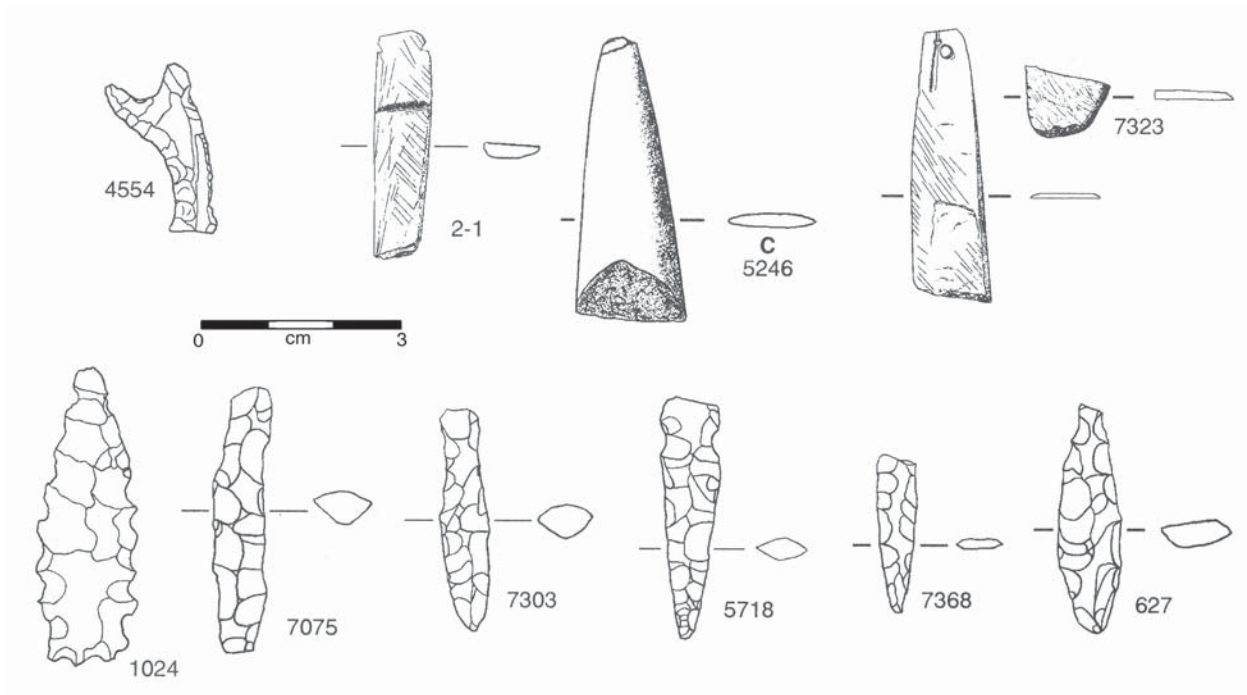


Figure 36. Type 215: Stone pendant.



Figure 37. Type 216: Ground or sculpted ornament.

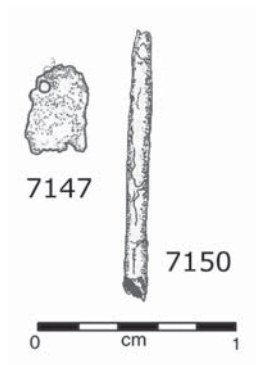


Figure 38. Type 217: Copper artifacts.

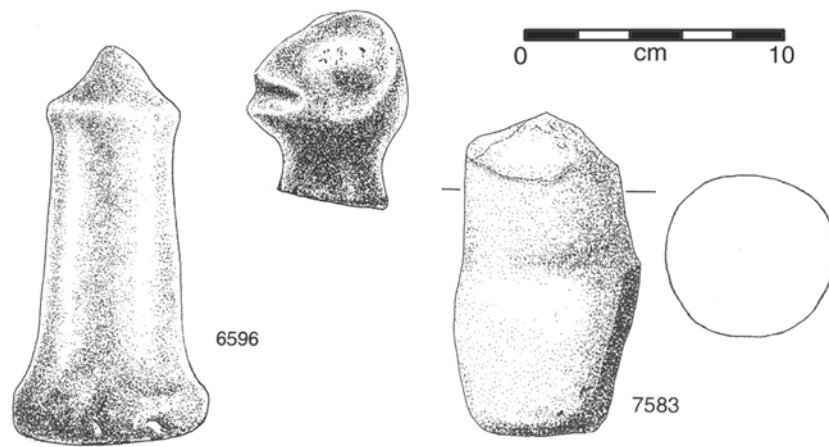


Figure 39. Type 219: Maul.

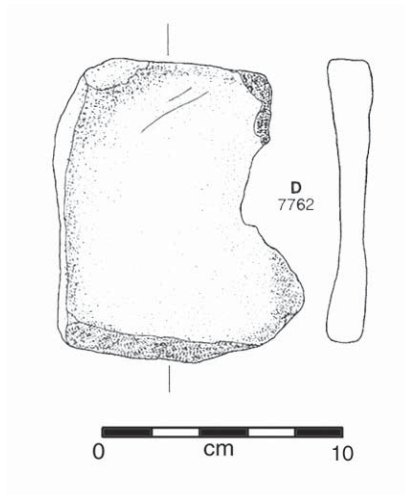


Figure 40. Type 221: Pigment palette.

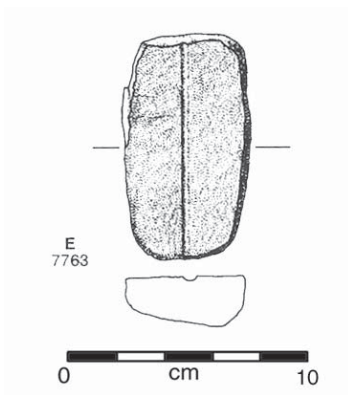


Figure 41. Type 222: Arrowshaft Straightener.



2 cm.

Photo 1. Item 7818.

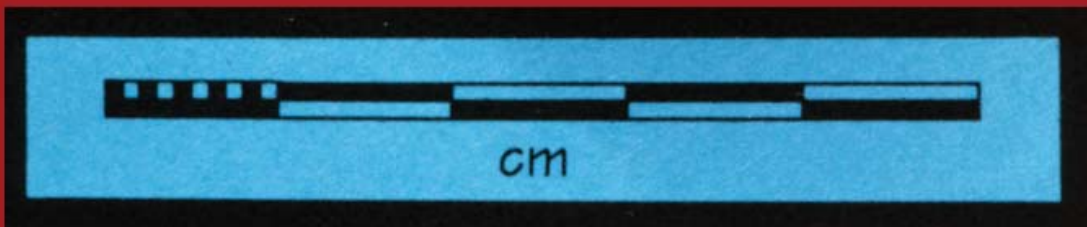


Photo 2. Items 5424, 5490.



Photo 3. Items 7594, 7149.

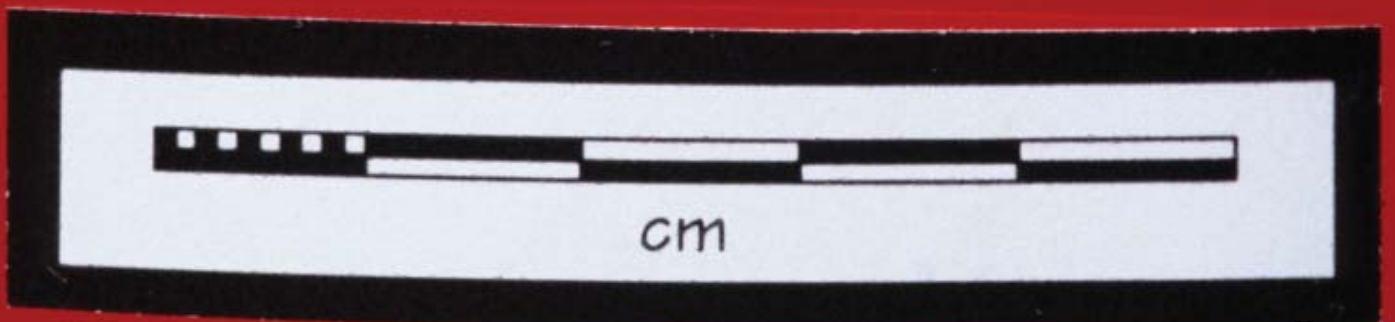


Photo 4. Items 2281, 7151 & Chapter 2 Shell Bracelet fragment.

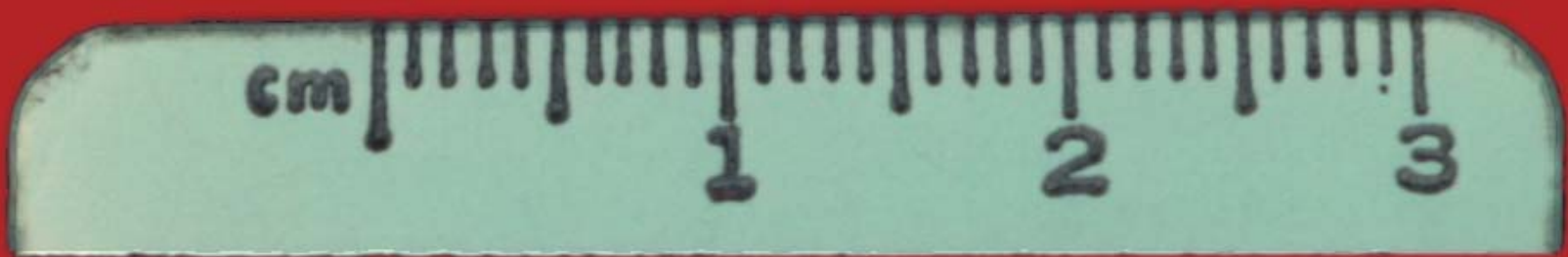
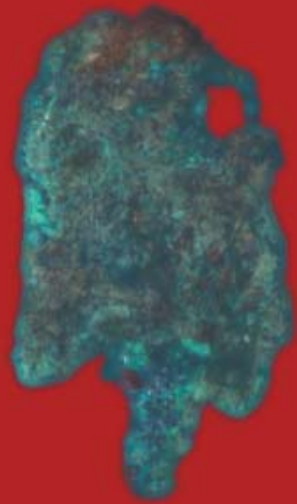


Photo 5. Items 7147, 7150.